Addendum # 1 -- 14-014.0-CIP -- E-Mail Coversheet

John Shields Parkway - Phase 1

Planholder	*Company E-Mail*	*Company Contact*
Allied Construction Industries	coakley@aci-construction.org	Candi Oakley
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Complete General Construction Comp	estimators@cgclist.com	Anne Rhymer
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Jess Howard	lauras@jesshoward.com	Laura Snyder
John Eramo & Sons, Inc.	jason@eramo.com	Jason Hazelbaker
Kokosing Construction	mab@kokosing.biz	Mary Blue
McDaniels Construction Corp., Inc.	moncrief@mcdanielsconstruction.con	Dan Moncrief III
Mid-West Landacpe Inc.	midwest3450@sbcglobal.net	Mike Willman

Please sign, date and return by e-mail to hgeorge@dublin.oh.us to verify receipt of this addendum. Attach signed copy of addendum to bid package when submitting a bid.

Received by:_____ Date: _____

City of Dublin

Date of Addendum
Jun 11, 2014

City of Dublin -- Division of Engineering
5800 Shier-Rings Road Dublin OH 43016
Phone (614) 410-4640 Fax (614) 761-650

Addendum # 1 -- 14-014.0-CIP -- E-Mail Coversheet

John Shields Parkway - Phase 1

Nickolas Savko and Sons	singram@nicksavko.com	Scott Ingram
Sachs Masonry	SACHSMASONRY@YAHOO.COM	David Sachs
Shelly & Sands, Inc.	bcolbert@shellyandsands.com	Betty Colbert
Strawser Paving Company, Inc.	mpollock@strawserpaving.com	Mark Pollock
US Utility Contractor Company, Inc.	dtaylor@usutilitycontractors.com	Don Taylor

Please sign, date and return by e-mail to hgeorge@dublin.oh.us to verify receipt of this addendum. Attach signed copy of addendum to bid package when submitting a bid.

Received by:_____ Date: _____

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5800 Shier-Rings Road Dublin OH 43016
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ADDENDUM NO. 1
to the contract for

John Shields Parkway Phase 1
14-014-CIP
Bid Date: June 17, 2014

TO PROSPECTIVE BIDDERS: The following changes shall be made part of the contract documents for this project:

BID SCHEDULE

Remove Bid Schedule Sheets 27-1 through 27-7 dated June 3, 2014 and replace with Bid Schedule Sheets 27-1 through 27-7 dated June 11, 2014.

Add Reference No. 64A:		
ITEM 801	12 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	10 LF
Add Reference No. 69B:		
ITEM 807	COLUMBUS STANDARD HEAVY DUTY VALVE BOX	2 EACH
Add Reference No. 73A:		
ITEM 816	6 INCH WATER SERVICE TAP ABANDONED	1 EACH
Add Reference No. 99A:		
ITEM SPEC	PERENNIAL PLANTINGS	7337 EACH
Add Reference No. 99B:		
ITEM SPEC	BULB PLANTINGS	7337 EACH
Remove Reference No. 69:		
ITEM 803	12”x8” TAPPING SLEEVE AND VALVE AND APPURTENANCES	1 EACH
Remove Reference No. 70:		
ITEM 808	CUT AND PLUG 6” WATER SERVICE TAP	EACH
Remove Reference No. 99:		
ITEM SPEC	LANDSCAPE PLANTINGS	3283 SQ FT
Change Unnumbered Item:		
ITEM 805	1 INCH WATER SERVICE TAP, COMPLETE	1 EACH
To Reference No. 69A:		
ITEM 805	3/4 INCH WATER SERVICE TAP, COMPLETE	1 EACH

* * * Beginning of Sheet 2 * * *

Change Reference No. 97:
ITEM SPEC STRUCTURAL SOIL PLACED 33 CU YD
To Reference No. 97:
ITEM SPEC STRUCTURAL SOIL PLACED 30 CU YD

STANDARD DRAWINGS

Add the attached Standard Drawings to the bid book. These had been included on the Title Sheet, but were omitted from the Standard Drawings section of the bid book.

City of Dublin Standard Drawing – SL-05
City of Columbus Standard Drawing – AA-S112
City of Columbus Supplemental Specification - 1100

PLAN SHEETS

Add plan sheet 7A containing revision #1 dated 6-11-14.

Replace plan sheet 4, 7, 8, 10, 26, 27, 28, 37, 38, 39, 41, 42, and 43 with updated plan sheets 4, 7, 8, 10, 26, 27, 28, 37, 38, 39, 41, 42, and 43 containing revision #1 dated 6-11-14.

* * * * * * * * * * *

Addendum Approved By:

Paul A. Hammersmith, PE 06-11-2014
Director of Engineering/City Engineer Date

* * * * * * * * * * *

Terminus for Addendum No. 1
Certification by Bidder

Bidder shall sign and date one copy of this Addendum No. 1 and submit with his proposal as evidence of receipt and evaluation of same in his bid analysis.

Signed: _____ **Date:** _____

Company: _____

* * * End of Sheet 2 * * *

BID SCHEDULE

BIDDER agrees to perform all work described in the CONTRACT DOCUMENTS for the following unit prices:

John Shields Parkway - Phase 1

CITY OF DUBLIN

REF NO.	(1) ITEM	(2) DESCRIPTION	(3) QUANT.	(4) UNIT	(5) LABOR ($)	(6) MATERIAL ($)	(7) (5)+(6) TOTAL ($)	(8) (3) x (7) TOTAL EXTENDED INFORMAL PRICE ($)
		ROADWAY						
1	201	CLEARING AND GRUBBING	1	LUMP				
2	202	CURB AND GUTTER REMOVED	135	FT				
3	202	PIPE REMOVED, 24" AND UNDER	26	FT				
4	202	PIPE REMOVED, OVER 24"	150	FT				
5	203	EXCAVATION, AS PER PLAN	1988	CU YD				
6	203	EMBANKMENT, AS PER PLAN	309	CU YD				
7	204	PROOF ROLLING	4	HR				
8	204	SUBGRADE COMPACTION	2040	SQ YD				
9	204	EXCAVATION OF SUBGRADE	510	CU YD				
10	204	GRANULAR MATERIAL, TYPE B	510	CU YD				
11	204	GEOTEXTILE FABRIC, TYPE D	620	SQ YD				
12	606	GUARDRAIL, TYPE MGS, AS PER PLAN	90	FT				
13	608	CONCRETE WALK (T=4")	2505	SQ FT				
14	608	CURB RAMP (PD-02)	6	EACH				
15	608	DETECTABLE WARNING (PD-03)	6	EACH				
16	SPEC	BRICK PAVER WALK	6925	SQ FT				
17	SPEC	GRANITE PAVER WALK	290	SQ FT				
18	SPEC	INCREASE OR DECREASE IN EXCAVATION OR EMBANKMENT	500	CU YD				
							ROADWAY SUBTOTAL =	
		EROSION CONTROL						
19	207	PERIMETER FILTER FABRIC FENCE	225	FT				
20	207	INLET PROTECTION	10	EACH				
21	207	CONSTRUCTION SEEDING AND MULCHING	2600	SQ YD				
22	653	TOPSOIL FURNISHED AND PLACED (T=4")	290	CU YD				
23	659	SEEDING AND MULCHING, AS PER PLAN	2600	SQ YD				
24	659	REPAIR SEEDING AND MULCHING, AS PER PLAN	130	SQ YD				
25	659	COMMERCIAL FERTILIZER	0.24	TON				
26	659	WATER	15	M GAL				

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John Shields Parkway - Phase 1

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27	670	DITCH EROSION PROTECTION MAT, AS PER PLAN	95	SQ YD				
28	SPEC	CONCRETE WASHOUT AREA	1	EACH				
		EROSION CONTROL SUBTOTAL =						
		DRAINAGE						
29	604	CURB & GUTTER INLET MANHOLE (AA-S121 WITH AA-S142 CASTING AND CONCRETE COLLAR)	4	EACH				
30	604	CURB INLET (AA-S120)	4	EACH				
31	604	MANHOLE, TYPE C (AA-S102 WITH ST-03)	6	EACH				
32	901	12 INCH PIPE, 706.02, WITH TYPE 1 BEDDING, WITH CMSC 912 COMPACTED GRANULAR MATERIAL	182	FT				
33	901	18 INCH PIPE, 706.02, WITH TYPE 1 BEDDING, WITH CMSC 912 COMPACTED GRANULAR MATERIAL	86	FT				
34	901	36 INCH PIPE, 706.02, WITH TYPE 1 BEDDING, WITH CMSC 912 COMPACTED GRANULAR MATERIAL	519	FT				
35	SPEC	HEADWALL FOR 36" PIPE REMOVED & RESET	1	EACH				
36	SPEC	DETENTION OUTLET CHAMBER	4	EACH				
		DRAINAGE SUBTOTAL =						
		PAVEMENT						
37	204	GEOTEXTILE FABRIC, TYPE D (FOR PERMEABLE PAVEMENT)	1300	SQ YD				
38	259	PAVEMENT REPLACEMENT, TYPE I	6	CU YD				
39	301	ASPHALT CONCRETE BASE	190	CU YD				
40	301	ASPHALT CONCRETE BASE (FOR DRIVEWAY)	10	CU YD				
41	304	AGGREGATE BASE	220	CU YD				
42	304	AGGREGATE BASE (FOR ASPHALT PATH)	60	CU YD				
43	304	AGGREGATE BASE (FOR DRIVEWAY)	20	CU YD				
44	407	NTSS-1HM TRACKLESS TACK COAT	120	GAL				

BID SCHEDULE

BIDDER agrees to perform all work described in the CONTRACT DOCUMENTS for the following unit prices:

John Shields Parkway - Phase 1

CITY OF DUBLIN

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45	407	NTSS-1HM TRACKLESS TACK COAT FOR INTERMEDIATE COURSE	90	GAL				
46	423	CRACK SEAL	50	LB				
47	448	ASPHALT CONCRETE INTERMEDIATE COURSE (MEDIUM TRAFFIC), PG64-22	70	CU YD				
48	448	ASPHALT CONCRETE INTERMEDIATE COURSE (MEDIUM TRAFFIC), PG64-22 (FOR DRIVEWAY)	10	CU YD				
49	448	ASPHALT CONCRETE SURFACE COURSE (MEDIUM TRAFFIC), PG64-22	50	CU YD				
50	448	ASPHALT CONCRETE SURFACE COURSE (MEDIUM TRAFFIC), PG64-22 (FOR ASPHALT PATH)	30	CU YD				
51	448	ASPHALT CONCRETE SURFACE COURSE (MEDIUM TRAFFIC), PG64-22 (FOR DRIVEWAY)	10	CU YD				
52	609	COMBINATION CURB AND GUTTER (RD-02)	50	FT				
53	609	CURB, STRAIGHT 18 INCH	95	FT				
54	609	GRANITE CURB (18 INCH X 6 INCH)	700	FT				
55	609	GRANITE BAND (15 INCH X 6 INCH)	515	FT				
56	609	GRANITE BAND (12 INCH X 6 INCH)	640	FT				
57	609	GRANITE PLANTER CURB (6-1/4 INCH X 6 INCH)	1155	FT				
58	SPEC	PERMEABLE PAVER ROADWAY	330	SQ YD				
59	SPEC	AGGREGATE BASE (NO. 57 STONE)	135	CU YD				
60	SPEC	AGGREGATE BASE (NO. 2 STONE)	495	CU YD				
61	SPEC*	GEOGRID	595	SQ YD				
62	SPEC	BRICK PAVER DRIVEWAY	30	SQ YD				
							PAVEMENT SUBTOTAL =	

BID SCHEDULE

BIDDER agrees to perform all work described in the CONTRACT DOCUMENTS for the following unit prices:

John Shields Parkway - Phase 1

CITY OF DUBLIN

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		WATER WORKS						
63	801	6 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	75	LF				
64	801	8 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	527	LF				
64A	801	12 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	10	LF				
65	801	CONCRETE BLOCKING CLASS C, INCREASE OR DECREASE	50	CU YD				
66	801	DUCTILE IRON FITTINGS, INCREASE OR DECREASE	50	LB				
67	802	6" VALVE AND APPURTENANCES	3	EACH				
68	802	8" VALVE AND APPURTENANCES	3	EACH				
69	803	12"X8" TAPPING SLEEVE AND VALVE AND APPURTENANCES	1	EACH	**DO NOT BID**			
69A	805	3/4" INCH WATER SERVICE TAP, COMPLETE	1	EACH				
69B	807	COLUMBUS STANDARD HEAVY DUTY VALVE BOX	2	EACH				
70	808	CUT AND PLUG 6" WATER SERVICE TAP	1	EACH	**DO NOT BID**			
71	809	FIRE HYDRANT, TYPE A	2	EACH				
72	811	INCREASE OR DECREASE IN EXCAVATION AND BACKFILL	50	CU YD				
73	812	1" AIR RELEASE OUTLET	1	EACH				
73A	816	6 INCH WATER SERVICE TAP ABANDONED	1	EACH				
74	SPEC	SURVEY COORDINATES	1	LUMP				
							WATER WORKS SUBTOTAL =	

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		TRAFFIC CONTROL						
75	630+	GROUND MOUNTED SUPPORT, NO. 3 POST, TYPE S, AS PER PLAN	56	LF	**DO NOT BID**			
76	630+	2 1/4" SQUARE ANCHOR POST, AS PER PLAN	4	EACH				
77	630+	STREET NAME SIGN SUPPORT, AS PER PLAN	1	EACH				
78	630+	STREET NAME SIGN, AS PER PLAN	2	EACH				
79	630+	SIGN FLAT SHEET, AS PER PLAN	54	SQ FT				
80	630*	WOOD POST, 4"x4", WHITE	9	EACH				
81	644*	REMOVAL OF PAVEMENT MARKING	448	LF				
82	644*	CENTER LINE, 4"	0.09	MI				
83	644*	CROSSWALK LINE, 12"	205	LF				
84	644*	CHANNELIZING LINE, 8"	85	LF				
85	644*	WORD ON PAVEMENT, 72"	1	EACH				
86	644*	LANE ARROW, 72"	1	EACH				
87	644*	STOP LINE, 24"	11	LF				
		TRAFFIC CONTROL SUBTOTAL =						
		LIGHTING						
88	625*	CONDUIT, 3", 725.051, SCH 80, SLEEVE	112	LF				
89	625*	CONDUIT, 3", 725.051, SCH 40	533	LF				
90	625*	CONDUIT, 2", 725.051, SCH 40	222	LF				
91	625*	CONDUIT, JACKED OR DRILLED, 3", 725.051, SLEEVE	110	LF				
92	625*	TRENCH (SL-05)	645	LF				
93	625*	PLASTIC CAUTION TAPE (SL-05)	645	LF				
94	625*	PULL BOX, 725.08, 18"x11"x18" QUAZITE PG1118BG18 OR APPROVED EQUAL	7	EACH				
		LIGHTING SUBTOTAL =						

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		AEP DUCT BANK						
95	SPEC	6-5 INCH PVC, SCHEDULE 40, CONDUIT CONCRETE ENCASED IN TRENCH WITH CMSC 912 COMPACTED GRANULAR MATERIAL	370	FT				
							AEP DUCT BANK SUBTOTAL =	
		LANDSCAPING						
96	SPEC	PLANTING SOIL PLACED	304	CU YD				
97	SPEC	STRUCTURAL SOIL PLACED	30	CU YD				
98	SPEC	DECIDUOUS SHADE TREES	15	EACH				
99	SPEC	LANDSCAPE PLANTINGS	3283	SQ FT	**DO NOT BID**			
99A	SPEC	PERENNIAL PLANTINGS	7337	EACH				
99B	SPEC	BULB PLANTINGS	7337	EACH				
							LANDSCAPING SUBTOTAL =	

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		MISCELLANEOUS						
100	108.03**	TYPE B - CRITICAL PATH METHOD (CPM) SCHEDULE	1	LUMP				
101	614	MAINTAINING TRAFFIC, AS PER PLAN	1	LUMP				
102	623	CONSTRUCTION LAYOUT STAKES	1	LUMP				
103	624	MOBILIZATION	1	LUMP				
104	SPEC	PROOF SURVEY	1	LUMP				
							MISCELLANEOUS SUBTOTAL =	

* DENOTES ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (2013 EDITION).
** DENOTES CITY OF DUBLIN GENERAL CONDITIONS SECTION 100.
\+ DENOTES ITEM TO BE FURNISHED AND INSTALLED BY CITY OF DUBLIN; ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS (2013)
ALL OTHER ITEMS REFERENCE CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS, 2012 EDITION.

GRAND TOTAL =

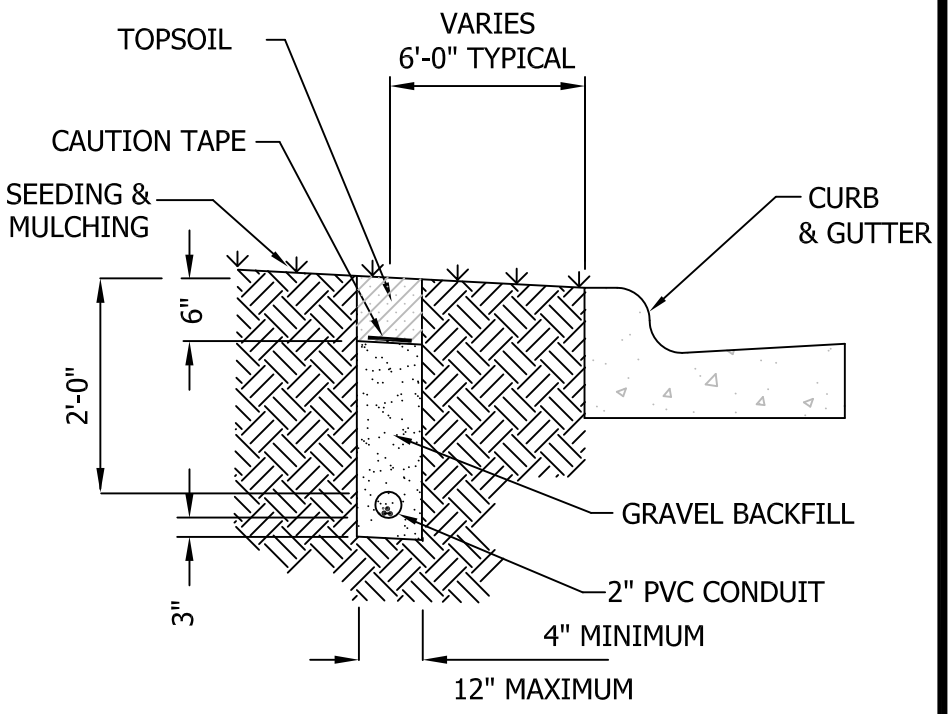
TOTAL BID FOR PROJECT: _____

SUBMITTED BY:

(COMPANY) _____

* NO SPLICING OF DISTRIBUTION CABLE LESS THAN 500 FEET IN LENGTH.

TRENCHING - CONDUIT TRENCHES SHALL HAVE VERTICAL WALLS AND BE EXCAVATED TO A DEPTH THAT PERMITS CONDUIT TO BE LAID AT 2'-0" BELOW FINISH GRADE WITH A GRAVEL COVER, ABOVE AND BELOW. BACKFILL GRAVEL TO TOPSOIL LIMIT. TRENCHES SHALL BE LOCATED ADJACENT TO AND PARALLEL WITH CURBS OR PAVEMENTS AND SHALL NOT DEVIATE MORE THAN 6" FROM THE LINES DESIGNATED. TRENCHES SHALL NOT EXCEED 12" IN WIDTH. REMOVE EXCESS SOIL AFTER BACKFILLING.



GRAVEL - SHALL BE UNCRUSHED WASHED GRAVEL AND PASS A 1/2" SIEVE. POUR IN PLACE AND COMPACT TO 95% STANDARD PROCTOR IN LAYERS NOT EXCEEDING 6" EACH.

TOPSOIL - FOR BACKFILLING SHALL BE CLEAN, LOOSE FRIABLE, LOAMY TOPSOIL FREE OF SUBSOIL OR REFUSE. TOPSOIL MAY BE FROM THE SITE OR IMPORTED. TOPSOIL SHALL BE PLACED AND SPREAD OVER THE AREAS DESIGNATED TO A DEPTH SUFFICIENTLY GREATER THAN THAT SHOWN SO THAT AFTER NATURAL SETTLEMENT THE COMPLETED WORK WILL CONFORM TO THE ELEVATIONS SHOWN.

SEEDING AND MULCHING - SHALL COMPLY WITH CITY OF COLUMBUS, OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS SECTION 659.

CONDUIT - SHALL BE HEAVY WALL RIGID NON-METALLIC SCHEDULE 40 PVC FOR USE ABOVE AND BELOW GROUND OR CONCRETE ENCASED. RATED FOR 90 DEGREES CELSIUS CONDUCTORS AND USE IN DIRECT SUNLIGHT. MATERIAL SHALL BE UL LISTED AND COMPLY WITH NEMA TC2-1978 AND F.S. #WC-1094A. PROVIDE IN 10 FOOT SECTIONS. SEAL ALL JOINTS WATERTIGHT. GLUE JOINTS WITH PVC CEMENT. BUSH ALL ENDS. ALL BENDS SHALL USE LONG RADIUS PREFORMED ELBOWS.

CONDUIT CAPS - PROVIDE MOLDED PLASTIC OR RUBBER CAPPING DEVICE THAT ONLY PERMITS WIRE TO PASS THROUGH WHILE PREVENTING DIRT, WATER, ETC. FROM ENTERING.

PULL WIRE - ALL EMPTY CONDUIT INSTALLED FOR FUTURE LIGHTING SHALL CONTAIN A NO. 10 AWG COPPER-CLAD OR ALUMINUM-CLAD PULL WIRE.

WIRING - DISTRIBUTION CABLE SHALL BE #4 AWG XHHW (WET RATED) STRANDED COPPER 600V, 90 DEGREES CELSIUS CONDUCTORS. USE #6 IN APPROPRIATE CONDITIONS. SYSTEM GROUND CABLE SHALL BE #4 AWG FOR POLE TO POLE APPLICATIONS.

METALIZED CAUTION TAPE - 79mm (3") WIDE RED PLASTIC TAPE WITH BLACK LETTERS READING "CAUTION BURIED ELECTRIC LINE BELOW". BURY ABOVE CONDUIT 158mm (6") MAX. BELOW GRADE. RUN CONTINUOUS IN ALL TRENCHES NOT COVERED BY PAVEMENT.

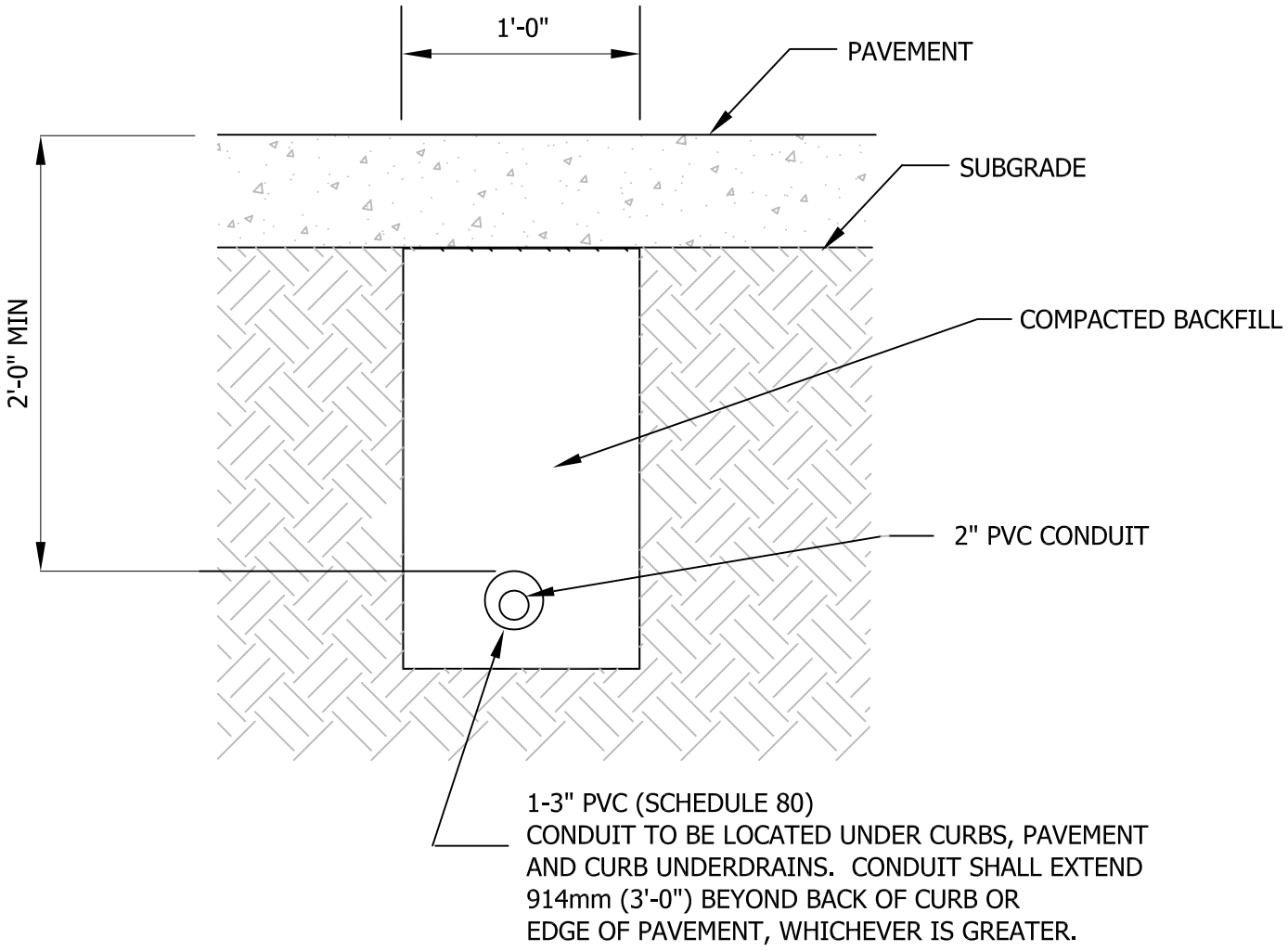
Date: 5/1/2014

City of Dublin
ENGINEERING

STANDARD DRAWING

TRENCHES

DRAWING NO. ***SL-05***



CONDUIT SLEEVE CROSSING PROPOSED PUBLIC ROADWAYS AND COMMERCIAL DRIVEWAYS

GENERAL - CONDUIT SLEEVES SHALL BE PROVIDED WHERE STREET LIGHTING CABLES CROSS ROADWAYS. CONDUIT SLEEVES SHALL ALSO BE PROVIDED UNDER ALL PROPOSED COMMERCIAL DRIVEWAYS.

TRENCHING - TRENCHES SHALL HAVE VERTICAL WALLS AND BE EXCAVATED TO A DEPTH THAT PERMITS CONDUIT SLEEVE TO BE PLACED 610mm (2'-0") BELOW FINISH GRADE. TRENCH SHALL BE LOCATED PERPENDICULAR TO THE CENTERLINE OF ROADWAYS AND COMMERCIAL DRIVEWAYS UNLESS OTHERWISE SPECIFICALLY NOTED. MAINTAIN INLINE WITH CONDUIT SETBACK DIMENSIONS AT INTERSECTIONS AND CURB CUTS.

BACKFILL - SHALL COMPLY WITH CITY OF COLUMBUS, OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS ITEM 636 TYPE 1, 2 OR 3 OR ITEM 912 COMPACTED GRANULAR BACKFILL.

MATERIALS - SHALL COMPLY WITH ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS SECTION 725.05.

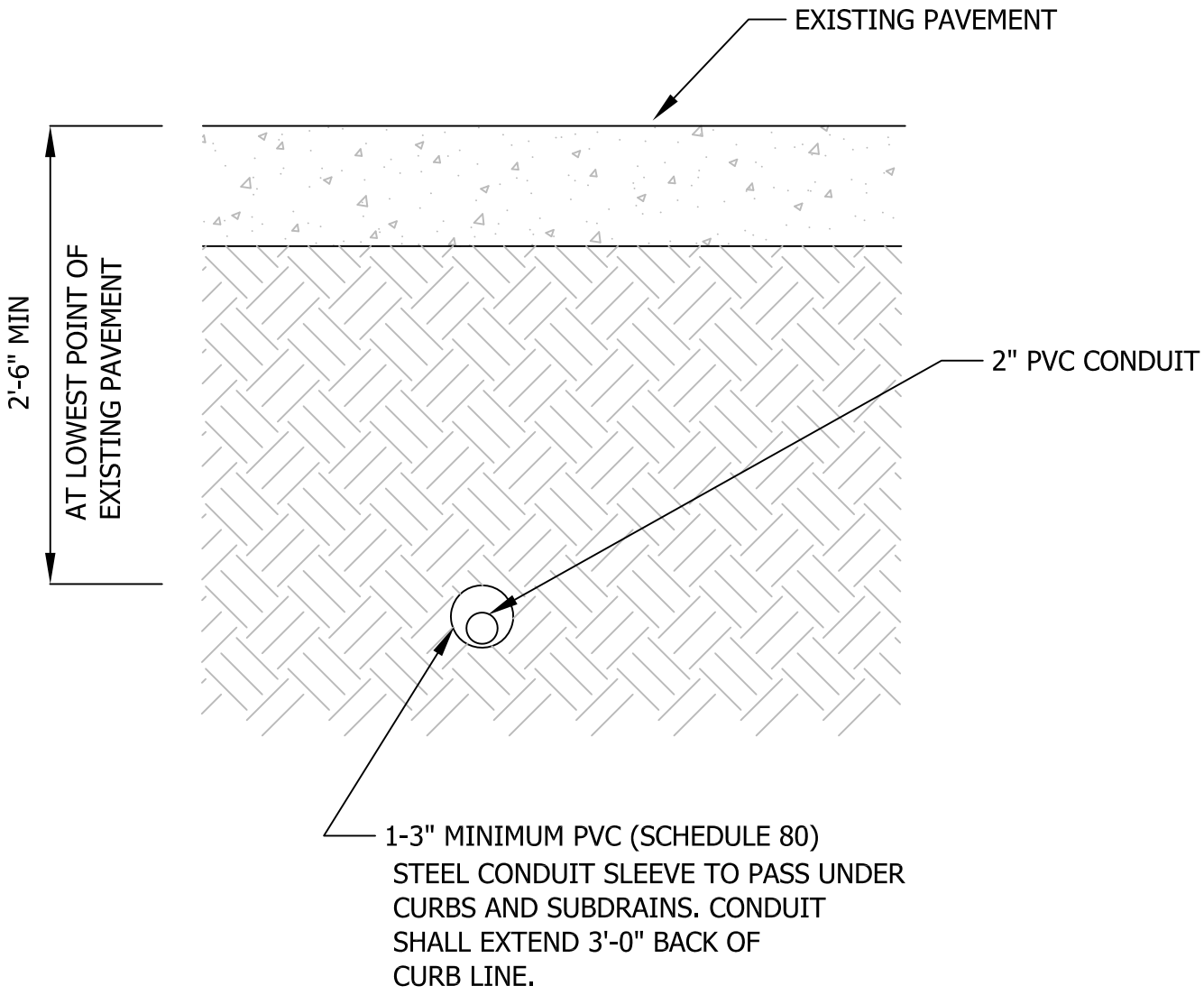
Date: 5/1/2014

City of Dublin
ENGINEERING

STANDARD DRAWING

TRENCHES

DRAWING NO. ***SL-05***



CONDUIT SLEEVES UNDER EXISTING PAVEMENT

CONDUIT SLEEVES PLACED UNDER EXISTING PAVEMENT OR PAVED SHOULDERS SHALL BE INSTALLED BY DRILLING, SUBJECT TO THE APPROVAL OF THE CITY ENGINEER. IF PLACED BY DRILLING, THE BORE SHALL NOT EXCEED THE CONDUIT DIAMETER BY MORE THAN (5) PERCENT. CONDUIT SHALL BE PLACED WITH A MINIMUM AMOUNT OF DISTURBANCE TO THE ROADWAY. CONDUIT SLEEVES SHALL BE GALVANIZED STEEL CONDUIT SIZED AS SHOWN WITH FITTINGS FURNISHED MEETING THE REQUIREMENTS OF ANSI C 80.1, C80.4, AND UL 6 FOR TYPE 1 RIGID STEEL CONDUIT. EACH LENGTH SHALL BEAR THE UL LABEL. CONTRACTOR WILL OBTAIN A "PERMIT TO WORK IN EXISTING STREET PUBLIC WAY" FROM THE DIVISION OF ENGINEERING, CITY OF DUBLIN.

Date: 5/1/2014

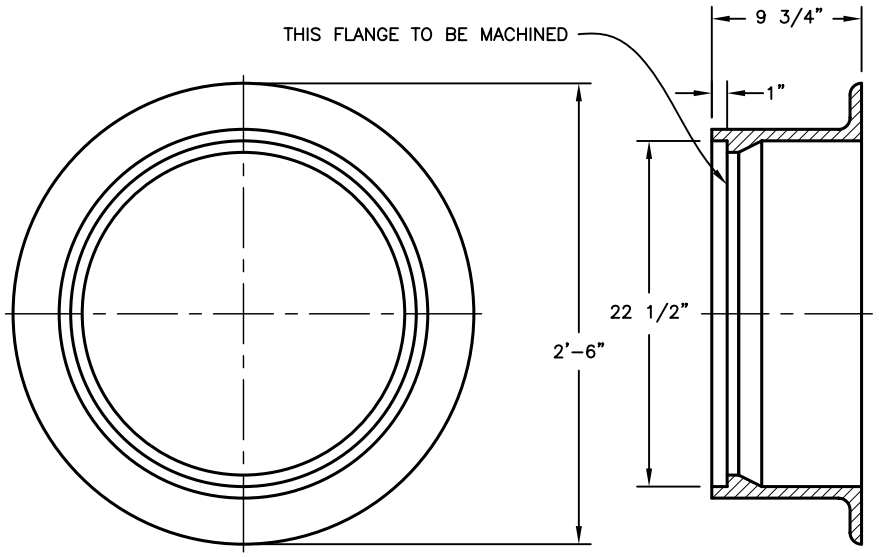
City of Dublin
ENGINEERING

STANDARD DRAWING

TRENCHES

SHEET 3 OF 3

DRAWING NO. ***SL-05***

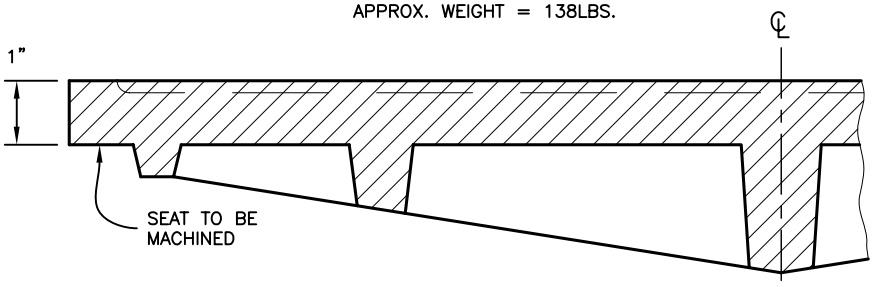


PLAN

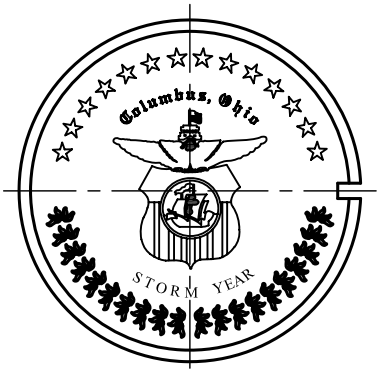
SECTION

GROUND RIM

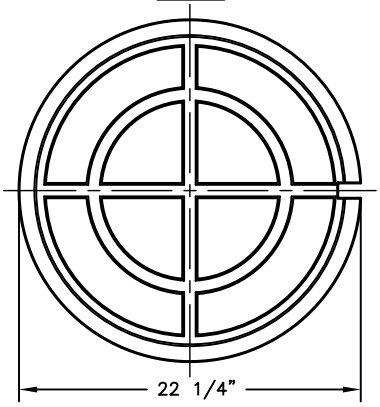
APPROX. WEIGHT = 138LBS.



SECTION A–A



TOP



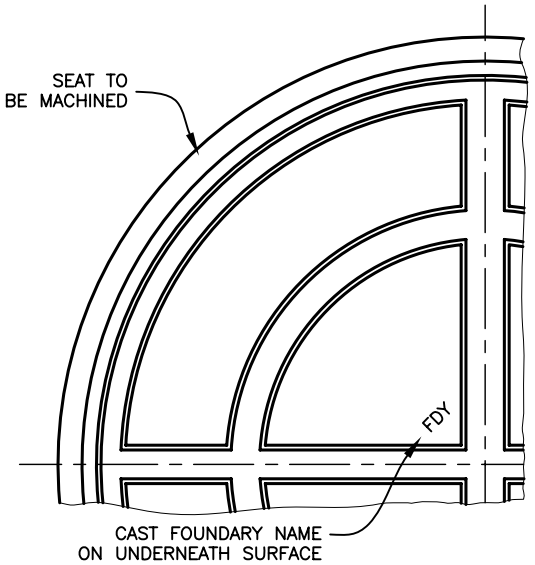
BOTTOM

LID

APPROX. WEIGHT = 126 LBS.

PRE–APPROVED CASTINGS:

EJ NO. – 1660A3, 1661Z1
NEENAH NO. – 1762



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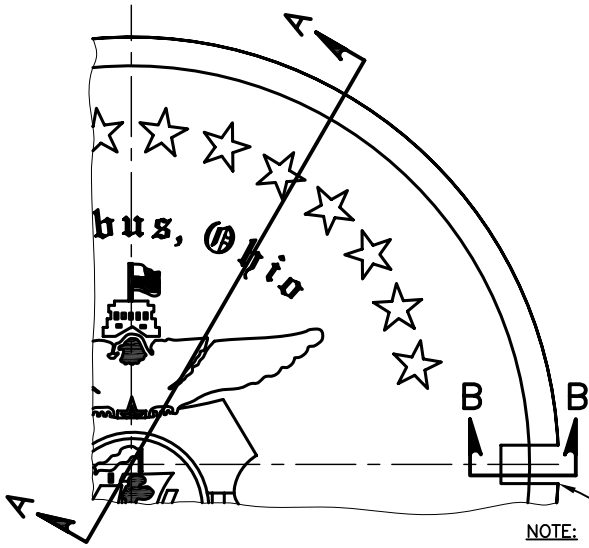

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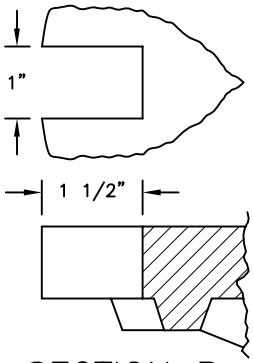

SECTION B–B

PICKHOLE

NOTE:

FRAMES, GRATES, AND COVERS SHALL MEET THE REQUIREMENTS OF 604.02 AND AASHTO M306

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE SSES MANAGER	STANDARD DIMENSIONS FOR MANHOLE FRAME & COVER CASTING (STORM SEWERS)	STANDARD DRAWING AA–S112 REVISED 12/6/13 PAGE 1 / 1

CITY OF COLUMBUS, OHIO

SUPPLEMENTAL SPECIFICATION 1100
REVISIONS TO THE 2012 CONSTRUCTION
& MATERIAL SPECIFICATIONS

DATED February 1, 2014

101.03 Definitions
Page 7

101.03 Definitions.

National Holidays. New Years Day, January 1; Martin Luther King's Birthday - the Third Monday in January; Presidents' Day, the Third Monday in February; Memorial Day, the last Monday in May; Independence Day, July 4; Labor Day, the First Monday in September; Columbus Day, the Second Monday in October; Thanksgiving Day, the fourth Thursday in November; Christmas Day, December 25.

105.04 Coordination of the Contract Documents
Page 33

105.04 Coordination of the Contract Documents. In case of discrepancy, the Engineer will resolve any discrepancies using the following descending order of precedence:

A. ~~Contract Form~~ Addenda

B. ~~Addenda~~ Proposal and Special Provisions

C. ~~Proposal~~ Plans (Calculated dimensions on the Plans will govern over scaled dimensions.)

D. ~~General Provisions (Section 100)~~ Supplemental Specifications

E. ~~Special Provisions~~ Standard Drawings

F. ~~Plan Notes~~ Standard Specifications

~~G. Plans (calculated dimensions will govern over scaled dimensions)~~

~~H. Supplemental Specifications~~

~~I. Standard Drawings~~

~~J. Standard Specifications (Sections 200 through 1000)~~

105.11 Inspection of Work
Page 38

105.11 Inspection of Work. All materials and each part or detail of the Work shall be subject to inspection by the Engineer, Inspector or duly authorized City representative.

The Engineer, Inspector or duly authorized City representative shall be allowed access to all parts of the Work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection. Notify the Engineer at least twenty four hours prior to all required special inspections and testing as specified in the Contract Documents or as required by the Engineer.

If the Engineer requests it, the Contractor, at any time before acceptance of the Work or any portion thereof, shall remove or uncover such portions of the finished Work as may be directed. After examination, the Contractor shall restore said portions of the Work to the standard required by the Contract Documents. Should the Work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as Extra Work; but should the Work so exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense.

The Contractor shall notify the Engineer at least forty eight hours in advance of any changes in the work schedule. This notification is required to accommodate construction inspection scheduling. The notification shall include the beginning date and time of the work, and the duration of the work. The notification shall be submitted to the Engineer in writing. In the absence of such notification, and if the work is performed without inspection, the Engineer may require the work to be removed and redone.

If the City assigns an inspector(s) to the project and the Contractor does not notify the City of its intent not to work, charges incurred by the City for inspection services will be deducted from monies owed to the Contractor/Developer, unless such charges are waived by the Director.

Any Work done or materials used without supervision or inspection by an authorized City representative may be ordered removed and replaced at the Contractor's expense. Failure to reject any defective Work or materials shall not in any way prevent later rejection when such defects are discovered, or obligate the City to final acceptance of the Work.

When any unit of government or political subdivision or railroad or any corporation is to pay a portion of the cost of the Work covered by this Contract, its respective representatives shall have the right to inspect the Work. Such inspection shall not make any unit of government or political subdivision or railroad or any corporation a party to this Contract, and shall in no way interfere with the rights of the Contractor or City hereunder.

107.01 Laws to be Observed

Page 47-48

107.01 Laws to be Observed. The Contractor shall keep fully informed of all Federal, State and local laws, ordinances, codes and regulations and all orders and decrees of authorities having any jurisdiction or authority, which in any manner affect those

engaged or employed on the Work, or which in any way affect the conduct of the Work. The Contractor shall at all times observe and comply with all such laws, ordinances, codes, regulations, orders, and decrees; and shall protect and defend, indemnify and hold harmless the City as provided in 107.24 relating to violation of any such law, ordinance, code, regulation, order, or decree, whether by the Contractor or its employees or agents, or the Contractor's subcontractors or suppliers.

The Contractor agrees that in the hiring of employees for the performance of work under this Contract or any subcontract hereunder, no Contractor or subcontractor, nor any person acting on behalf of such Contractor or subcontractor, shall, by reason of race, sex, ~~creed or~~ sexual orientation, gender identity or expression, color, religion, ancestry, national origin, age, disability, family status, or military status discriminate against any citizen of the United States in the employment of labor or workers, who is qualified and available to perform the work to which the employment relates. ~~That no~~ No Contractor, subcontractor, nor any of their employees or agents shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, sex, ~~creed or~~ sexual orientation, gender identity or expression, color, religion, ancestry, national origin, age, disability, family status, or military status.

108.02 Preconstruction Conference

Page 60-61

108.02 Preconstruction Conference. Unless otherwise provided for in the Contract Documents, no Work shall be commenced under this Contract until the Contract is fully executed and a Notice to Proceed has been issued.

The Preconstruction Conference shall not occur until after the Contract is fully executed. In general, fourteen days are required to notify all interested parties of a Preconstruction Conference. The Contractor shall take due note of this requirement and aid in the timely scheduling of the Preconstruction Conference to avoid unnecessary delays in the commencement of the Work.

At or before the Preconstruction Conference, the Contractor shall submit, to the Engineer, the baseline construction schedule prepared according to 108.03. The Contractor shall furnish a list of proposed subcontractors and material suppliers at or before the Preconstruction Conference. If the Contractor fails to provide the required submissions at or before the Preconstruction Conference, the Engineer may order the Preconstruction Conference suspended until they are furnished.

~~Unless otherwise provided for in the Contract Documents, no Work shall be commenced under this Contract until a Preconstruction Conference has been held.~~

~~After the Contract is fully executed, the City will send Preconstruction Conference notices to all parties. In general, fourteen days are required to notify all interested parties of a Preconstruction Conference. The Contractor shall take due note of this requirement and aid in the timely scheduling of the Preconstruction Conference to avoid unnecessary delays in the commencement of the Work.~~

~~At or before the Preconstruction Conference, the Contractor shall submit to the Engineer the baseline construction schedule prepared according to 108.03. Furnish a list of proposed subcontractors and material suppliers at or before the Preconstruction Conference. If the Contractor fails to provide the required submissions at or before the Preconstruction Conference, the Engineer may order the Preconstruction Conference suspended until they are furnished.~~

207.02 Materials

Page 131

207.02 Materials. Furnish commercial fertilizer, seed, and mulch materials conforming to Item 659. Furnish stabilized construction entrances, filter fabric ditch checks, rock checks, inlet protection, perimeter filter fabric fence, straw wattles, bale filter dikes, sediment basins and dams, dikes, slope drains, and rock channel protection materials as specified on the standard construction drawings.

207.03.B.1 Construction Requirements

Page 132 - 133

1. Perimeter Controls. Use perimeter filter fabric fence to protect the project from sheet flow runoff from off Right-of-Way and off construction limit locations. Use perimeter filter fabric fence to protect the following project items from sheet flow runoff: water bodies, wetlands, or other significant items shown on the plans.

Use dikes to prevent sediment flow from coming on to the project and to non-vegetated barren areas on the project.

Install perimeter filter fabric fence, stabilized construction entrances, and dikes concurrent with clearing and grubbing operations.

207.06 Method of Measurement

Page 136 - 137

207.06 Method of Measurement. The City will measure fertilizer by the number of tons (metric tons) under 659 Commercial Fertilizer.

The City will measure Construction Seeding and Mulching by the number of square yards (square meters).

The City will measure Slope Drains by the number of feet (meters).

The City will measure Sediment Basins and Dams by the number of cubic yards (cubic meters) of excavation and embankment.

The City will measure Perimeter Filter Fabric Fence, Bale Filter Dike and Construction Fence by the number of feet (meters).

The City will measure Filter Fabric Ditch Check by the number of feet (meters).

The City will measure Inlet Protection by the number of inlets protected (each).

The City will measure Dikes by the number of cubic yards (cubic meters) of excavation and embankment.

The City will measure Construction Ditch Protection and Construction Slope Protection by the number of square yards (square meters).

The City will measure Rock Channel Protection, Type C or D (with or without) filter by the number of cubic yards (cubic meters).

The City will measure Sediment Removal by the cubic yards (cubic meters).

The City will measure Stabilized Construction Entrances by the Cubic Yard (Cubic Meter).

207.07 Basis of Payment

Page 137

207.06 Basis of Payment. The City will not pay if temporary erosion and sediment control items are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled; install such temporary work at no expense to the City.

The City will not pay for stream crossing work specified in 207.03.B.8.b.

If erosion control items in the Contract are properly placed according to the Contract Documents, the City will pay to maintain or replace erosion control items at the unit bid prices or according to 109.05.

The City will pay for sediment removed from dams, basins, inlet protection, ditch checks, rock checks, perimeter filter fabric fence, bale filter dikes, and all other types of filter fabrics, straw or hay bales, or any other temporary sediment control items under 207 Sediment Removal.

The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
207	Square Yard (Square Meter)	Construction Seeding and Mulching
207	Foot (Meter)	Slope Drains
207	Cubic Yard (Cubic Meter)	Sediment Basins and Dams
207	Foot (Meter)	Perimeter Filter Fabric Fence
207	Foot (Meter)	Bale Filter Dike
207	Foot (Meter)	Filter Fabric Ditch Check
207	Each	Inlet Protection
207	Cubic Yard (Cubic Meter)	Dikes
207	Square Yard	Construction Ditch Protection

	(Square Meter)	
207	Square Yard (Square Meter)	Construction Slope Protection
207	Cubic Yard (Cubic Meter)	Rock Channel Protection Type C or D with Filter
207	Cubic Yard (Cubic Meter)	Rock Channel Protection Type C or D without Filter
207	Cubic Yard (Cubic Meter)	Sediment Removal
207	Foot (Meter)	Construction Fence
207	Square Yard (Square Meter)	Geo-textiles
207	Cubic Yard (Cubic Meter)	Stabilized Construction Entrance

259.03 Classification
Page 154

259.03 Classification. Based upon the Engineer's selection as described in 259.02, furnish one of the following pavement types:

Permanent Pavement Replacement (Standard Drawing No. 1441 ~~Dr. A~~)
Type I - Bituminous
Type III- Brick
Type V – Concrete

Driveway Pavement Replacement (Standard Drawing No. 2160 ~~Dr. A~~)
Type IIIA - Asphalt Driveways
Type IIIB - Concrete Driveways
Type IIIC - Gravel Driveways

306.01 Description
Page 163

306.01 Description. This work consists of constructing a PCC base on a prepared subgrade or base course. This work shall conform to the requirements of Items 305 and 451 except that:

1. For concrete proportioning, meet the requirements of Item 499, Concrete, Class F.

2. Conform to the opening-to-traffic requirements as specified in 451.16 except that the split tensile strength shall be 250 pounds per square inch (1.7 MPa), as tested per ASTM C496.

3. Load transfer devices are not required.

401.20 Asphalt Binder Price Adjustment
Page 181

401.20 Asphalt Binder Price Adjustment. A Contract Item is eligible for a price adjustment when the Contract's Proposal specifically includes an Asphalt Binder Price Adjustment note ~~and the Contract Item meets the quantity limitations of the ODOT proposal note for Asphalt Binder Price Adjustments for Single Year or Multi-Year, as applicable~~.

451.061(2) Depositing and Curing Concrete During Cold Weather
Page 247

2. Once placed, cover the entire surface of the top and the sides of the newly placed concrete and protect from freezing for seven days, unless split tensile ~~beam~~ specimens have attained the required minimum strength specified. Accomplish protection as directed in Item 511.12 with insulated blankets or with a combination of loose straw 12 inches (0.3 m) thick covered with a securely fastened exterior cover of waterproof material.

451.07 Placing Reinforcement
Page 248

451.07 Placing Reinforcement. Place pavement mesh of the size and at the locations within the concrete slab shown on ~~the~~ ODOT standard construction drawing~~s~~ BP-1.1.

499.04 Proportioning Options for Portland Cement Concrete
Page 264

499.04 Proportioning Options for Portland Cement Concrete. The Contractor may substitute one of the following options for each respective class of concrete given in Table 499.03-2 and Table 499.03-3. Use the same air content specified in Table 499.03-2 and Table 499.03-3. Comply with slump requirements of Table 499.03-1. Submit requests to use any of the following optional mix designs to the ~~Engineer~~ Laboratory for approval before use. The SSD weights specified in Table 499.04-1 through Table 499.04-3 were calculated using the specific gravities in 499.03.C. Make adjustments to the mix design when specific gravities differ by more than ± 0.02. Make other adjustments allowed in 499.03.D and approved by the Engineer.

511.17 Curing and Loading
Page 312

511.17-1 (Table).

TABLE 511.17-1			
		Age of Concrete in Days	
	Span[1]	No ~~Beam~~ Split Tensile Test	~~Beam~~ Split Tensile Test [2]
Removing Falsework	Over 10 feet (3 m)	14	5
	10 feet (3 m) or less and all pier caps	7	3
Traffic [3]	Any	14	7
[1] Span is defined as the horizontal distance between faces of the supporting elements when measured parallel to the primary reinforcement.			
[2] Applicable only when the average Split Tensile psi ~~modulus of rupture~~ for two tests is not less than 400 ~~650~~ psi (2.76 ~~4.5~~ MPa).			
[3] When placing Class HP concrete for a superstructure between October 15 and March 15, open the deck to traffic no sooner than 30 days after placement.			

603.02 Materials
Page 420

603.02 Materials. Furnish materials conforming to:

Soil and granular embankment 203.02.R
Structural backfill, Types 1 and 2 ..... 703.11

~~The Engineer will allow Type 3 structural backfill, conforming to 703.11, to be used as bedding below the pipe only when pumping operations do not control severe ground water problems. Place at least 12 inches (300 mm) of Type 1 structural backfill on top of the Type 3 structural backfill to prevent piping.~~

Embankment 203.02.R

603.11 (D) Placement and Compaction Requirements.
Page 431

~~**(D)** Place Structural Backfill Type 3 in layers not to exceed 12 inches (300 mm) loose depth. Vibrate, tamp, or compact to approximately 85 percent of the original layer thickness.~~

604.06 Precast Concrete Modular Construction.
Page 436

604.06 Precast Concrete Modular Construction. Furnish precast bases on a compacted structural backfill bed having a minimum thickness of 3 inches (75 mm). Ensure that the structural backfill bed is level and uniformly support the entire area of the base.

Catch basins and inlets manufactured with knock-out panels will only be permitted where the construction drawings show a pipe entering the structure that will replace the panel.

~~After placing the pipe, grout all openings between the pipe and structure less than 4 inches (100 mm) with mortar and grout all openings between the pipe and structure~~

~~greater than 4 inches (100 mm) with nonshrink mortar. Seal all joints between modules with materials specified in Item 603 for Type A, B, C, D, or F conduit.~~

All joints between modules shall be as follows:

Sanitary manholes shall conform to the requirements of ASTM C443 as it pertains to the use of a confined gasket.

Storm sewer applications shall be in conformance with ASTM C443, 706.10 or 706.11.

Pipe entrances to the precast modular sections for sanitary sewers 8 inches (203 mm) to 48 inches (1.2 m) in diameter shall be a flexible watertight joint in accordance with 706.16.

Pipe entrances to the precast modular sections for storm sewers shall be in accordance with 706.16, or neatly grouted in place.

All lift holes and other openings in the structure shall be thoroughly and neatly grouted with cement mortar or other suitable material approved by the Engineer, after all pipes are placed into the structure.

All sanitary manholes shall be watertight structures.

Cure median inlets with the same materials and methods specified in 622.07.

630.02 Materials

Page 513-514

630.02 Materials. The acceptance of materials and products is based on Certified Test Data, furnished in triplicate, or on test results of samples according to 106.02, as required by the Engineer.

Transfer manufacturers' guarantees or warranties on all traffic sign material to the City or other maintaining agency upon completion and acceptance of the project.

Furnish materials conforming to:

Concrete, Class C 499, 511
Steel:
Structural steel..... 711.01
Reinforcing steel 509.02
U-channel posts..... 730.015
Square posts 730.016
~~Wooden Box Beam ..... 730.017~~
Street name sign supports…….....730.017
Tube and pipe..... 730.01
Anchor bolts and nuts 730.02
Poles and arms 730.03

Base and arm plates..... 730.04
Handhole covers..... 730.05
Pole caps 730.06
Arm caps 730.07
Hardware 730.08
Stainless steel 730.09
Stainless steel hardware 730.10
Messenger wire 732.18
Aluminum:
Sheet and plate 730.11
Extrusions..... 730.12
Tube and pipe..... 730.13
Castings 730.14
Forgings 730.15
Welding rods 730.16
Hardware 730.17
Other materials:
Decals..... 725.21
Reflective sheeting, Type F..... 730.18
Reflective sheeting, Type G..... 730.19
Reflective sheeting, Type H.... 730.192
Reflective sheeting, Type J 730.193
Nonreflective sheeting 730.20
Silk screen inks 730.22
Transparent electronic cuttable films 730.23
Cantilevered offset brackets……730.24

630.04 Sign Fabrication
Page 514-516

630.04 Sign Fabrication. Sign types include flat sheet, double faced, extrusheet, and temporary overlay. Flat sheet signs consist of one-piece units made of aluminum. Double faced signs consist of flat sheet aluminum or extruded aluminum blanks with legend on both sides. Extrusheet signs consist of a number of horizontal panels assembled to form a complete sign. Temporary overlay signs consist of an aluminum sheet covering portions or entire surfaces of extrusheet signs.

Prior to reflective sheeting application, clean aluminum sign surfaces either by total immersion in a tank containing an alkaline solution of the manufacturer's specification or by steam cleaning with an alkaline solution of the manufacturer's specification, followed by a thorough rinsing with running water. After cleaning, etch the surface with an acid solution, and dry. Do not allow cleaned and etched surfaces to become contaminated by contact with oil or grease. Drill or punch bolt holes to finish size.

Use sign legends according to the (a) City Sign Design Manual, (b) OMUTCD and (c) the ODOT Sign Design Manual. In case of a conflicting specification statement, the specification document hierarchy shall be in the order listed from (a), highest, to (c) lowest. Use Clearview font for positive contrast legends on freeway and expressway

guide signs and on all other guide signs when permitted in the ODOT Sign Design Manual and City Sign Design Manual, respectively. Use capital legends and upper/lower case legends in accordance with the City Sign Design Manual. When either is permitted in the City Sign Design Manual, use upper/lower case legends.

For flat sheet, double faced mile marker, double faced street name and ground mounted extrusheet signs, use Type G, H or J reflective sheeting for background and reflective legends. For overhead extrusheet signs, use Type H reflective sheeting for the background, and use Type H reflective sheeting for reflective legends, shields and symbols (including hazardous cargo plate, airport symbol, arrows and borders). Apply reflective sheeting to the surface according to the manufacturer's recommendations, with no blisters, wrinkles, tears, or blemishes. Do not use reboundable or damage control sheeting for permanent signs.

For reflective legends on flat sheet, double faced street name signs and double faced mile marker signs, use reverse silk screen transparent ink or electronic cuttable film. For nonreflective legends, use direct silk screen black ink or direct applied nonreflective black sheeting copy. For double faced mile marker signs, use flat sheet aluminum and apply reflective sheeting and legend to both sides.

Street Name Sign faces shall be bonded to 0.063 inch (1.6 mm) thick sign blanks according to the sheeting manufacturers' recommendation. There shall be 2 sign faces on each sign blank, 1 on each side, unless otherwise noted. Street name legends shall be printed in heights of 4" on 9" blade, 6" on 12" blade, and 8" on 18" blades (102, 152 and 203 mm) upper and lower case. Standard FHWA Series D 2000 EX lettering shall be used on all signs 9" and 18" blades and FHWA Series C 2000 EX lettering for all 12" sign blades. Prefixes and suffixes shall be printed in heights of 2, 3, and 4 inch (50, 76, and 102 mm) upper and lower case. All letters shall be centered on the vertical dimension and the legend will be centered on the various sign blades horizontally. Street name letter heights will be as follows: 4 inch (102 mm) legend with 2 inch (50 mm) prefix and suffix on a 9 inch (228mm) blade, 6 inch (152 mm) legend and 3 inch (76 mm) prefix and suffix on a 12 inch (305 mm) blade, and an 8 inch (203 mm) legend and 4 inch (102 mm) prefix and suffix on an 18 inch (457 mm) blade. The minimum distance between the edge of the sign and the first or last letter of the street name, prefix, or suffix shall be 4 inch (102 mm). See City of Columbus Standard Drawing(s) for fabrication of street name signs.

Extrusheet panels consist of flat sheet aluminum reinforced with aluminum extrusions attached by spot welding. The Contractor may use panels extruded in a single operation in lieu of extrusheet panels. Do not use extruded panels and extrusheet panels in the same sign. Bolt together the minimum number of full length, sheeted panels to achieve the sign height, using aluminum bolts, washers, lock washers and nuts. For reflective legends, shields and symbols (including hazardous cargo plate, airport symbol, arrows and borders) use direct applied reflective sheeting. Apply all reflective legend on a sign with the same rotation angle orientation. For nonreflective legends, use direct applied nonreflective black sheeting copy.

For temporary overlay signs, use 0.063-inch thick flat sheet aluminum, with a maximum panel size of 8 × 4 feet. Apply sheeting and legend as described above for extrusheet signs. Attach temporary overlays to extrusheet signs in the shop or field

using aluminum blind rivets at a maximum spacing of 18 inches on the peripheries of the temporary overlays and 24 inches within the interior. Position rivots so as not to disturb the legend on the underlying sign.

Use fluorescent yellow green reflective sheeting for the following signs: SCHOOL (S4-3), School Crossing (S1-1), yellow portions of school speed limit (S5-H3, S5-H4, S5- H5), SCHOOL ENTRANCE (S3-H3), SCHOOL BUS STOP AHEAD (S3-1), SCHOOL BUS TURN AHEAD (S3-H2), Bicycle Crossing (W11-1), Pedestrian Crossing (W11-2), Handicap Crossing (W11-9), SAFETY ZONE (W11-H15), and Playground (W15-1). Fabricate supplemental signs [such as SHARE THE ROAD (W16-1), Advisory Speed Plate (W13-1), Distance Plates (W16-2, W16-2a, W16-3, W16-3a), Supplemental Arrows (W16- 5p, W16-6p, W16-7p and AHEAD Plate (W16-9p)] from fluorescent yellow green sheeting when used with a sign above.

Use fluorescent yellow reflective sheeting for all yellow signs, yellow portions of multi-colored signs, and yellow sign post reflectors, except for signs and portions of signs required to be fabricated with fluorescent yellow green reflective sheeting.

For lighted signs, cover glare shield and rectangular luminaire support tube with nonreflective sheeting matching the predominant sign color.

Place identification decals of Type G silver white reflective sheeting with silk screened black numerals on signs in accordance with Figure 1. These sign identification decals shall be 6 inches by 3 inches in size and positioned so they can be read horizontally and are clearly visible, not near bolt holes or rivets. Place the decals on the back side of the sign in the lower right-hand corner of rectangular signs, or in an equivalent location of other sign shapes, approximately 3 inches from side and bottom sign edges (for smaller signs, these dimensions may be less).

The Engineer will reject signs delivered at the site without a properly applied decal. At the time of sign installation, indicate the installation data by scratching out the appropriate month and year. Do not allow the sign installation contractor to erect any such signs, or overlays, that do not have a properly completed and affixed sign decal.

630.06 Sign Supports

Page 517-518

630.06 Sign Supports. Sign supports consist of ground mounted, rigid overhead, span wire, and overpass structure mounted types. Fabricate sign supports according to the applicable requirements of Item 513, and weld according to 513.21. The approval of fabricators according to 501.03 will not apply. Hot-dip galvanize steel structural members according to 711.02. Galvanize steel hardware according to 730.08.

Tighten threaded fasteners, except anchor bolt nuts, by the "turn of the nut" method according to 513.20.

Furnish anchor bolts with a leveling nut, plain washers, lock washer, and anchor nut conforming to 730.02. Use anchor nuts with a plain washer against the base plate upper surface and a lock washer between the plain washer and anchor nut.

Tighten anchor bolt nuts according to 513.20, except that under Table 513.20-3, use the "nut rotation from snug tight condition" from 1/12 to 1/6 turn instead of 1/3 turn.

Apply anaerobic adhesive complying with Federal Standard MIL S 46163, Type II, Grade N to anchor bolts and other threaded connections 1/2-inch (13 mm) diameter or larger, according to the manufacturer's recommendations. Do not use anaerobic adhesive with torque-limiting nuts.

Submit alternate designs or materials for sign supports for acceptance at least 21 days in advance of a bid opening date. The Director will give notification of the acceptance or rejection of the alternate design to the bidder at least 7 days in advance of a bid opening date.

A. Ground Mounted Supports. Ground mounted supports consist of structural sections of the material and weights required. Drive the ground mounted supports into the earth or embed them in concrete, as specified. Install supports in exposed locations in accordance with the performance requirements of NCHRP 350.The support lengths shown on the plans are approximate. Determine the exact length of supports before fabrication.

1. Post Supports. Mark each driven post with a line of paint 6 inches above the specified driving depth. Drive posts to the specified depth without bending, distortion, or end mutilation. Do not splice posts. Do not place posts in drainage ditches. If unable to install the post at the specified location, relocate the post with the Engineer's approval at no cost to the City.

Install posts located in paved areas through a hole provided by sleeving or core drilling. After the post is in position, patch the hole with a non-shrink grout; except when the hole is in asphalt, patch with bituminous material.

For groupings of flat sheet signs in multiple arrangements mounted on posts, provide sign backing assemblies.

For temporary sign supports and their placement, conform to the OMUTCD.

2. Structural Beam Supports. Furnish ground mounted structural beam supports from rolled steel sections. The alternate design shown on ODOT Standard Drawing TC-41.10 is not acceptable in the City of Columbus. Furnish slip base connections when specified. Bolt the pieces of each beam together, and preload the assembly bolts before delivery to the project. Carefully handle assembled breakaway beams during transportation and erection. Upon erection, perform the final specified torquing on all threaded fasteners.

At least 4 weeks after erecting signs on breakaway beams, inspect the breakaway feature for evidence of shifting or loose fasteners. Re-torque all loose fasteners to specified values. Loosen and re-torque slip base plate fasteners even if no shifting or looseness is detected. However, if the base plate connection was made with torque limiting nuts, re- torque only if looseness is detected. Apply anaerobic adhesive to the re-torqued conventional nuts, or, as an alternate, use new torque limiting nuts with the proper range.

3. Pipe Supports. Furnish ground mounted pipe supports from structural steel pipe and tubing. Furnish bolt down anchor installations in existing concrete. Furnish triangular slip base connection when specified.

~~**4. Wooden Box Beam Supports.** Furnish wooden box beam supports from laminated veneers pressure treated with wood preservative. Install breakaway feature after installation when specified.~~

4. Street Name Sign Supports. Supports for double-faced street name signs shall be either 2.5 inch (63.5 mm) nominal post size (NPS) (2.875 O.D. x 0.203 inch wall) (73 mm O.D. x 5 mm) x 14 foot (4.3 m) long post, or 4 inch (102 mm) NPS (4.0 O.D. x 0.226 inch wall) (102 mm x 5.7 mm) x 21 foot (6.4 m) long post fabricated from new, hot dipped galvanized steel pipe in accordance with Section 711.02. All supports shall be embedded in concrete in accordance with 499 Class C, according to 511. The 2.5" (63.5mm) NPS supports shall be concreted in a hole with a minimum depth of 3 feet (0.91 m), and a diameter of 10 inches (254 mm). The post shall have a minimum of 11 feet (3.3 m) above ground level. 4.0 inches (102 mm) NPS supports shall be concreted in a hole with a minimum depth of 4 feet (1.2 m), and a diameter of 10 inches (254 mm). The post shall have a minimum of 14 feet (5.2 m) above ground level. All spoils from installation shall be removed from the worksite. The maximum allowable sign area for a 2 sign installation is 10 square feet (0.95 square meters). If the total street name sign area is greater than 10 square feet (0.9 m2), 1 sign support per sign shall be used. For street name sign support installation and locations see City of Columbus Standard Drawing(s).

630.14 Method of Measurement

Page 521-523

630.14 Method of Measurement. The City will measure Ground Mounted Post Support by the number of feet, and will include driving, hardware for anchor base installation, and furnishing and placing of patching materials for excavations in paved areas.

The City will measure Foundations for ground mounted pipe supports, ground mounted structural beam supports, rigid overhead sign supports and span wire sign supports by the number of each for one pipe, structural beam, pole, end frame or strain pole, and will include excavation, reinforcing steel, concrete, backfilling, and when required the 10 foot foundation section of concrete barrier, and the disposal of surplus excavation.

The City will measure Ground Mounted Structural Beam Support by the number of feet measured from the bottom of the foundation to the top of the sign, and will include furnishing and placing of patching materials for excavations in paved areas.

The City will measure Ground Mounted Pipe Support by the number of feet measured from the bottom of the foundation to the top of the sign and will include u-bracket, tubing, posts and hardware for sign attachment, bolt-down anchor and furnishing and placing of patching materials for excavations in paved areas.

~~The City will measure Ground Mounted Wooden Box Beam Support by the number of feet, and will include excavation, backfilling, disposal of surplus material, and installation of breakaway feature.~~

The City will measure Street Name Sign Support as the size and number of pipe supports, including excavation and concrete embedment.

The City will measure Street Name Sign as square footage (square meters) of sign blank, including brackets assemblies, mounting fittings and hardware.

The City will measure One Way Support ~~and Street Name Sign Support~~ by the number of feet, and will include driving and furnishing and placing of patching materials for excavations in paved areas.

630.15 Basis of Payment

Page 523-524

630.15 Basis of Payment. The City will not pay for relocating posts from their planned location without prior approval by the Engineer.

The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
630	Each	Ground Mounted Structural Beam Support Foundation
630	Each	Ground Mounted Pipe Support Foundation
630	Each	Rigid Overhead Sign Support Foundation
630	Each	Span Wire Sign Support Foundation
630	Foot	Ground Mounted Support, ___ Post
630	Foot	Ground Mounted Structural Beam Support, ___ Beam
630	Foot	Ground Mounted Support, Pipe
630	Foot	Ground Mounted Wooden Box Beam Support, _____Beam
630	Foot	One-Way Support, ___ Post
~~630~~	~~Foot~~	~~Street Name Sign Support, ___ Post~~
630	Each	2.5 inch (63.5mm) Street Name Sign Support
630	Each	4.0 inch (102mm) Street Name Sign Support
630	Square Foot	Street Name Sign
630	Foot or Each	Temporary Sign Support, ___ Post
630	Each	Breakaway Structural Beam Connection
630	Each	Triangular Slip Base Connection
630	Each	Overhead Sign Support, Type TC-___, Design___
630	Each	Combination Overhead Sign Support, Type TC-___, Design___
630	Each	Sign Attachment Assembly
630	Each	Luminaire Support Assembly
630	Each	Span Wire Sign Support, Type TC-17.10, Design ___
630	Each	Overpass Structure Mounted Sign Support, Type TC-___, Design___

630	Each	Sign Hanger Assembly, (Span Wire, Mast Arm)
630	Each	Sign Support Assembly, (Pole or Bridge Mounted)
630	Square Foot	Sign, (Flat Sheet, Ground Mounted Extrusheet, Overhead Extrusheet, Temporary Overlay)
630	Each	Sign, Double-Faced, (Mile Marker)
630	Square Foot	Sign Erected, (Flat Sheet, Extrusheet, Temporary Overlay)
630	Each	Sign Backing Assembly
630	Each	Sign Post Reflector
630	Square Foot	Covering of Sign
630	Each	Removal of Ground Mounted(Major) Sign and (Storage, Reerection, or Disposal)
630	Each	Removal of Ground Mounted(Structural Beam, Post, Pipe, Wooden Box Beam) Support and (Storage or Disposal)
630	Each	Removal of Overhead Mounted Sign and (Storage, Reerection, or Disposal)
630	Each	Removal of Overhead Sign Support and (Storage, Reerection, or Disposal), Type TC-___
630	Each	Removal of Overlay Sign

632.02 Contractor Personnel Requirements

Page 530

632.02 Contractor Personnel Requirements. Conform to the requirements of City Supplement 1063 for the installation or testing of traffic signal equipment. ~~Assign a full time employee of the Contractor to act as the project supervisor. Do not change the project supervisor without giving the Engineer written notice. Provide International Municipal Signal Association (IMSA) certified documentation for Contractor employees if requested by the City.~~

~~An IMSA level two certified technician shall perform all of the following controller work:~~

~~1. Back panel wiring terminations~~
~~2. Programming~~
~~3. Testing or turn on~~
~~4. Troubleshooting~~

~~Assign a foreman to each crew performing work for the project. A foreman shall be present at all times when work is performed by the crew. Each foreman shall be an IMSA level one certified technician. Provide prior verbal notice to the Engineer in order to replace a crew foreman.~~

~~In addition, any trade person performing the following work shall be an IMSA level one certified technician:~~

~~1. Cable splices~~
~~2. Signal head installation~~
~~3. Cable and wire installation~~
~~4. Power service installation~~
~~5. Ground rod testing~~
~~6. Cable insulation testing~~
~~7. Field wiring terminations~~

632.14 Foundations
Page 537 - 538

632.14 Foundations. Locate support foundations, and stake with the proper elevation. If underground or overhead obstacles are encountered during stakeout, or to correct slope and subsurface difficulties, change foundation location and orientation with the approval of the Engineer. Ensure that the approved location provides a safe clearance from overhead power lines for construction operations, in compliance with the National Electrical Safety Code. The Contractor is responsible for the correct location, elevation, and orientation for all poles and pedestals installed on the foundations.

Orient one side of the anchor base pole foundation cap parallel to the sidewalk, back of-curb or edge-of-pavement, edge of the curb ramp, as shown on the signal plans. Make the top of the foundation flush with any adjacent sidewalk or concrete area, except where the ground rises steeply behind the sidewalk or concrete area. In this case, match the back side of the foundation to the ground slope and set the street side of the foundation above the sidewalk or concrete area and completely out of the sidewalk or concrete area. Edge the pole foundation top using a 1/2-inch sidewalk edger and do not chamfer.

Install anchor bolts in the angular position shown in the plans. Install a minimum of two 2-inch conduit ells, used or unused, in each pole foundation.

Excavate for foundations using an earth auger to specified dimensions according to 503.04. Exercise caution when excavating in areas of underground installations to avoid their disturbance or damage. When a cave-in occurs or at the direction of the Engineer, excavate using casing, sleeving, or other methods, with the Engineer's approval according to 732.10. If subsurface obstructions are encountered, remove the obstructions, or replace the excavated material and relocate the foundation, with the Engineer's approval. If bedrock is encountered, the Contractor may reduce that portion of the specified foundation depth within the bedrock up to 50 percent. Perform all necessary dewatering of the excavation.

Perform foundation concrete work according to Item 511, except that the loading restrictions in 511.17 are modified by this subsection. Place the concrete against undisturbed soil or compacted embankment. Form the top of the foundations to a nominal depth of 6 inches below the groundline. Place the concrete foundation,

including formed top, in one continuous concrete pour.

For foundations for anchor base type supports, provide the required reinforcing rods, and have anchor bolts and conduit ells accurately held by a template.

Remove forms and templates once the concrete has hardened sufficiently so as not to be susceptible to damage. After 14 days, erect and load supports on anchor base foundations. The Contractor may erect and load supports after 7 days if the tests of two split tensile ~~beam~~ specimens of concrete yield an average ~~modulus of rupture~~ of not less than 400 ~~650~~ pounds per square inch.

632.23 Cable and Wire

Page 540

Replace unreadable table 632.23-1 with the following:

TABLE 632.23-1 FIELD WIRING HOOKUP

PED UNIT FIELD WIRING HOOKUP

PED UNIT LOCATION	CROSSWALK DISPLAY	WIRE COLOR
SOUTH CROSSWALK	WALK	BLACK
	DONT WALK	ORANGE
WEST CROSSWALK	WALK	GREEN
	DONT WALK	RED
NORTH CROSSWALK	WALK	BLUE
	DONT WALK	WHITE W/BLACK TRACER
EAST CROSSWALK	WALK	GREEN W/BLACK TRACER
	DONT WALK	RED W/BLACK TRACER

SIGNAL HEAD & CABINET FIELD WIRING HOOKUP

SIGNAL DISPLAY	WIRE COLOR PER APPROACH
THRU R	RED
THRU Y	ORANGE
THRU G	GREEN
L/T R	BLACK (FUTURE USE ONLY)
L/T ~~Y~~	WHITE W/BLACK TRACER
L/T ~~G~~	BLUE
R/T R	NOT USED BY CITY
R/T ~~Y~~	RED W/BLACK TRACER
R/T ~~G~~	GREEN W/BLACK TRACER

WHITE SHALL BE USED FOR THE COMMON. SPLICE ALL WIRES IN THE SIGNAL HEAD OR PED UNIT. USE A #14 AWG 2 WIRE SPADE TERMINAL FOR EVERY 2 WIRES PER CONNECTION AND A #14 AWG 1 WIRE SPADE TERMINAL FOR EACH SINGLE WIRE CONNECTION TO CONNECT ALL WIRES TO ALL FIELD TERMINALS. USE BUTT SPLICES ON ALL THROUGH WIRES. ALL UNUSED WIRES SHALL BE SPLICED THROUGH AND SHALL HAVE A DEAD-END TERMINAL AT THE END OF THE WIRE.

632.28 (H) Cabinet Assembly Testing By the City of Columbus

Page 544

H. Cabinet Assembly Testing. ~~By the City of Columbus.~~ Perform all cabinet assembly and signal testing and installation following the requirements of Supplemental Specification 1611. ~~The Division of Planning and Operations Electronic Systems Shop will bench test the intersection controller and its complete cabinet assembly prior to the equipment being installed in the field. Testing will not begin unless complete and correct cabinet assembly wiring schematics, loop detector units, and if specified, the intersection transceiver unit are submitted with the cabinet. The test procedures will consist of operating the equipment for a minimum of forty-eight (48) hours. Deliver the controller and complete cabinet assembly for testing to the Division of Planning and Operations Traffic Maintenance Shop at 1820 East 17th Avenue, Columbus, Ohio 43219. Load and unload all equipment and obtain a receipt from shop personnel that lists all delivered materials by manufacturer, model number, and serial number. The Division will complete testing on the controller and cabinet assembly within ten (10) City working days. Upon completion of the testing the Division will notify the Contractor that the equipment can be picked up. Replace, repair or correct as necessary all devices found to be unsatisfactory and resubmit for testing.The Division will schedule testing of this returned equipment as quickly as possible but will only provide a forty-five (45) day guarantee for the turn-around time period. The Contractor shall be solely responsible for any delay caused by this testing. Do not install control equipment, which has not passed testing or which has not been tested by the Division, in the field to control traffic. The Contractor may have a representative in attendance during the testing process. There are no costs associated with the testing. Any cost associated with the delivery and pick-up shall be incidental to the cost of the equipment. Contact the Division of Planning and Operations Electronic Systems Coordinator for equipment status.~~

703.08 Aggregate for Pipe Bedding and Initial Backfill (New Section)
Page 632

703.08 Aggregate for Pipe Bedding and Initial Backfill.

1. Provide No. 57 coarse aggregate, as specified in 703.01, consisting of washed gravel, or CCS.

Do not use RPCC for any bedding or initial backfill materials.

Do not use reclaimed asphalt concrete for any bedding or initial backfill materials.

703.11 Structural Backfill for 603 Bedding and Backfill.
Page 632 - 633

703.11 Structural Backfill ~~for 603 Bedding and Backfill~~. Furnish structural backfill ~~for 603 bedding and backfill~~ consisting of CCS, gravel, natural sand, sand manufactured from stone, ~~or~~ foundry sand, or RPCC (Type I only).

Do not use RPCC for any bedding or initial backfill materials.

Do not use RPCC as backfill material for any metallic pipe.

Do not use reclaimed asphalt concrete for any bedding or backfill materials.

Use foundry sand if the material meets these requirements and meets the requirements of the Ohio EPA, Division of Surface Water, Policy 400.007 "Beneficial use of Non-Toxic Bottom Ash, Fly Ash and Spent Foundry Sand and Other Exempt Waste," and all other regulations. Ten days before using foundry sand on the project, from the Ohio EPA, the Contractor may elect to have an independent consultant pre-qualified by ODOT in remedial design environmental site assessment review the proposed usage. The consultant will provide all documentation utilized to usage according to all Ohio EPA regulations. Ensure that the consultant coordinates all EPA required meetings, documentation, and testing requirements. Ensure that the consultant certifies this to the City.

A. Structural Backfill Type 1.

1. Furnish Type 1 structural backfill that meets the gradations of Item 304, except 0 to 20 percent may pass the No. 200 sieve.

2. Physical properties.

Percent of wear, Los Angeles test, maximum (CCS or washed gravel)	50 %
Loss, sodium, sulfate soundness test, maximum	15 %
~~Percent by weight of fractured pieces (one or more faces), minimum (Type 3 only)~~	~~90 %~~

Do not exceed the following percentages of deleterious substances:

Material Type	Percent by weight
Shale and shaly material	5.0
Chert, that disintegrates in 5 cycles of the soundness test	5.0

Ensure that the portion of the material passing through the No. 40 (425 μm) sieve has a maximum liquid limit of 25 and a maximum plasticity index of 6.

When using RPCC, ensure that the maximum percentage passing the #200 sieve is 10%.

B. Structural Backfill Type 2.

1. Furnish Type 2 structural backfill that meets the gradation below:

Sieve Size	Total Percent Passing
2 1/2 inch (63 mm)	100
1 inch (25.0 mm)	70 to 100
3/4 inch (19.0 mm)	–
3/8 inch (9.5 mm)	–
No. 4 (4.75 mm)	25 to 100
No. 8 (2.36 mm)	–
No. 40 (425 μm)	10 to 50
No. 50 (300 μm)	–
No. 200 (75 μm)	5 to 15

2. Physical properties:

Percent of wear, Los Angeles test, maximum (CCS or gravel)	50 %
Loss, sodium sulfate soundness test, maximum	15 %

Ensure that the portion of the material passing through the No. 40 (425 mm) sieve has a maximum liquid limit of 25 and a maximum plastic index of 6.

703.13 Coarse Aggregate for Items 305, 451 and 452.
Page 633

703.13 Coarse Aggregate for Items 305, 306, 451 and 452.

703.15 Suitable Materials for Embankment Construction.
Page 636

~~**703.15**~~ **703.16 Suitable Materials for Embankment Construction**.

703.16 Aggregate Materials for 304.
Page 638

~~**703.16**~~ **703.17 Aggregate Materials for 304.**

703.17 Materials for Items 410, 411, and 617.
Page 639

~~**703.17**~~ **703.18 Materials for Items 410, 411, and 617**

703.18 Rock and Aggregate Materials for Item 601.
Page 640

~~703.18~~ 703.19 Rock and Aggregate Materials for Item 601.

706.05 Precast Reinforced Concrete Box Sections.
Page 661

706.05 Precast Reinforced Concrete Box Sections. Provide precast reinforced concrete box section conforming to ASTM C 1577, with the following modifications:

Use precast concrete member manufacturers certified by the Laboratory according to City Supplement 1073.

Submit shop drawings according to 501.04 (A).

6.2.1 Provide cement according to 701, except 701.07.

6.2.2 Provide fly ash according to 701.

6.3 Provide aggregates conforming to the quality requirements of 703.02.

6.5 Provide reinforcement according to 709.10 or 709.12. Provide longitudinal distribution reinforcement according to 709.01, 709.10 or 709.12.

7.1 Use only the following box sizes with a span by rise of 8 x 4, 5, 6, 7; 10 x 5, 6, 7, 8, 9; and 12 x 4, 6, 8, 10 feet.

9.1 Provide hardened concrete that contains a minimum of 4 percent entrained air for wet-cast sections with spans less than 14 feet and for all sections with spans 14 feet and greater.

9.4 Do not use lift holes. Use handling devices that do not require a hole through the box.

10.1 Verify concrete strength using cylinders. Do not ship items before the concrete reaches its design strength.

11.5 Ensure a minimum cover of 1/2 inch over both circumferential and longitudinal reinforcement at the mating surfaces of joints.

15 In addition, mark the identification of the plant on each box section. For box sections 14 feet or greater, mark the reinforcing steel areas for the section on each box section. Place the manufacturers' name and required product information on the inside of the box section within the top one-half of the culvert.

706.051 Precast Reinforced Concrete Three-Sided Flat Topped Culverts
Page 662

706.051 Precast Reinforced Concrete Three-Sided Flat Topped Culverts. Provide precast concrete three-sided flat topped culverts according to ASTM C 1504, with the following modifications:

Provide flat deck culvert structures with a minimum clear span (measured normal to the structure at the bottom of the haunch) of 14 feet and a minimum opening rise (measured from bottom of leg to bottom of deck at the centerline of the structure) of 4

feet; and a maximum clear span of 34 feet and maximum opening rising of 10 feet. Ensure minimum wall and deck thicknesses of 10 inches and 12 inches respectively, measured under the haunch normal to the structure and at the centerline of the span measured perpendicular to the structure.

Use precast concrete member manufacturers certified according to City Supplement 1073.

Ensure that the manufacturer submits design calculations, a structural load rating and shop drawings according to 501.04 (A) ~~for review and approval by the City~~. Do not produce any units until approved drawings have been submitted to the City ~~receiving approval~~. ~~Submit a minimum of five copies of the drawings. Allow a minimum of four weeks for approval.~~ Ensure that the shop drawings include the following:

1. Load rate the structure according to the requirements of Section 900 of ODOT's Bridge Design Manual.
2. All material specifications.
3. All plan view.
4. All elevation view.
5. All headwall and wingwall attachment requirements.
6. All dimensions.
7. All maintenance of traffic phases.
8. All section sizes.
9. All design handling strength.

The manufacturer may modify an approved shop drawing and resubmit according to 501.04 (A) ~~for approval to the City~~.

706.052 Precast Reinforced Concrete Arch Sections

Page 666

706.052 Precast Reinforced Concrete Arch Sections. Provide precast reinforced concrete arch sections according to ASTM C 1504, with the following modifications:

This item shall consist of manufacturing precast reinforced concrete arch sections for culverts.

Use precast concrete member manufacturers certified according to City Supplement 1073.

~~5.~~ Ensure the manufacturer submits design calculations, a structural load rating and shop drawings according to 501.04 (A) ~~for review and approval by the City~~. Do not produce any units until approved drawings have been submitted to the City ~~receiving approval. Submit a minimum of five copies of the drawings. Allow a minimum of 4 weeks for approval.~~ Ensure the shop drawings include the following:

1. Load rate the structure according to the requirements of Section 900 of ODOT's Bridge Design Manual.
2. All material specifications.
3. All plan view.
4. All elevation view.

5. All headwall and wingwall attachment requirements.
6. All dimensions.
7. All maintenance of traffic phases.
8. All section sizes.
9. All design handling strength.

The Contractor may modify an approved shop drawing and resubmit according to 501.04 (A) ~~for approval to the City~~.

706.053 Precast Reinforced Concrete Round Sections
Page 670

706.053 Precast Reinforced Concrete Round Sections. Provide precast reinforced concrete elliptical and circular arch sections according to ASTM C 1504, with the following modifications:

This item consists of manufacturing precast reinforced concrete elliptical and circular arch sections for culverts.

Use precast concrete member manufacturers ~~of~~ certified according to City Supplement 1073.

~~5.~~ Ensure the manufacturer submits design calculations, a structural load rating and shop drawings according to 501.04 (A) ~~for review and approval by the City~~. Do not produce any units until approved drawings have been submitted to the City. ~~receiving approval. Submit a minimum of five copies of the drawings. Allow a minimum of 4 weeks for approval.~~ Ensure the shop drawings include the following:

1. Load rate the structure according to the requirements of section 900 of ODOT's Bridge Design Manual.
2. All material specifications.
3. Plan view.
4. Elevation views.
5. Headwall and wingwall attachment requirements.
6. Dimensions.
7. All maintenance of traffic phases.
8. Section sizes.
9. Design handling strength.

The City will allow the Contractor to modify an approved shop drawing and resubmit according to 501.04 (A) ~~for approval to the City~~.

706.16 Resilient Connectors Between Precast Manhole Riser Sections, Catch Basins, Inlets, and Pipes. (New Section)
Page 676

706.16 Resilient Connectors Between Precast Manhole Riser Sections, Catch Basins, Inlets, and Pipes. Material and performance requirements shall meet the standards of ASTM C923, and be approved by the Engineer. The actual joint may be one of the following designs:

(a) Rubber sleeve with stainless steel band
(b) Rubber gasket compression
(c) Rubber gasket expansion

711.12 Gray Iron Castings
Page 699

711.12 Gray Iron Castings. Provide gray iron casting in accordance with ASTM A 48, Class 35B~~30B~~, with the following modifications:

730.017 Street Name Sign Supports (New Section)
Page 736

730.017 Street Name Sign Supports. Provide street name sign posts fabricated from new hot-dipped galvanized steel pipe as in 711.02 and in accordance with ASTM Specification Number A53 with a minimum yield strength of 30,000 psi and a minimum tensile strength of 48,000 psi. Evidence of prior rusting or pitting shall be cause for rejection of the posts. The street name sign post shall have a tubular section of uniform diameter and wall thickness. The diameter and wall thickness shall be for the standard weight (Schedule 40) nominal pipe size (NPS) as specified for each bid item. The finished post shall be straight, have a smooth finish and be free from defects affecting their strength, durability or appearance. All cut ends shall be free from burrs. Each piece shall be continuous with no butt welds.

Provide materials in accordance with the City's QPL.

730.24 Cantilever Offset Bracket (New Section)
Page 739

730.24 Cantilever Offset Bracket. Finished street name sign blanks shall be riveted to 2 cantilevered offset bracket assemblies with universal saddle clamps and a double tee section in accordance with 711.01. For signs greater than 48 inch (1.2m) in length, a special assembly is required. This assembly shall consist of 2 cantilevered offset brackets placed back to back and placed on top and bottom of sign assembly and riveted to the appropriate double tee section. The signs shall be attached to the sign supports using a stainless steel buckle-strap combination. For fabrication see City of Columbus Standard drawing(s).

801.03 Ductile Iron Pipe
Page 785

801.03 Ductile Iron Pipe.

Installation: Deliver film to the jobsite contained in a sound sacrificial sleeve of UV Protected Polyethylene to protect contents during storage prior to installation.

Install the polyethylene encasement per Method A of ANSI/AWWA C105/A21.5. Remove all lumps of clay, mud, cinders, etc. from the pipe surface before encasing the pipe. Keep soil, or bedding material, from becoming trapped between the pipe and the polyethylene sleeve. When lifting polyethylene-encased pipe use a fabric type sling or

padded cable to protect the polyethylene. Overlap joints (double coverage) and tape. Fold excess slack over the top of the pipe and tape in place every three feet. Carefully backfill the pipe according to Item 801.11 and 801.12. To avoid damage during backfilling allow adequate slack in the film tube at joints. Use backfill material free of cinders, rocks, boulders, nails, sticks or other material that could damage the polyethylene sleeve.

801.10 Excavation and Pipe Laying
Page 794

801.10 Excavation and Pipe Laying. Pipe Haunching (for 20 inch ~~inch~~ diameter and greater): Provide Crushed Carbonate Stone (CCS) Size No. 57 as specified in 703 – Aggregate. Place backfill carefully and simultaneously on each side of pipe to avoid lateral displacement of pipe and damage to joints. Extend the depth of haunching ~~extend~~ from the trench bottom up to 1/2 times the pipe diameter. If the pipe requires adjustment after placement, remove and re-lay as new pipe. Prevent damage to coating when placing backfill. Place haunching material manually around pipe and spade full depth of lift to prevent bridging and provide uniform bearing and side support.

801.11 Backfill Within The Influence of Pavement
Page 796

801.11 Backfill Within The Influence of Pavement. This section discusses backfilling above the initial backfill up to ground surface or beneath pavement subgrade within the influence of pavement as defined by Standard Drawing L-6309E.

Unless otherwise shown, specified, or ordered, provide granular backfill material meeting the requirements of ~~Section 304.02 or Section~~ Item 703.11. The City will allow use of ~~f~~Flowable Control Density Fill, Type II complying with the requirements of Item 613 as an alternate to compacted granular material. Do not use RPCC for any bedding or backfill material.

Ensure that the moisture content does not exceed less than minus 4 percent of optimum moisture prior to spreading. Shovel in-place and compact material using pneumatic tampers in restricted areas, and vibratory-plate compactors or engine-powered jumping jacks in unrestricted areas. Do not exceed 8 inches for a single layer of compacted thickness. See ~~Section~~ Item 801.12 for compaction requirements. Extend the compacted backfill to the top of the pavement subgrade for trenches within traveled areas, and to within 6 inches of the existing ground in all other areas.

801.12 Backfill Outside The Influence of Pavement
Page 797

801.12 Backfill Outside The Influence of Pavement. Backfill in conformance with the requirements of Section 801.11 above, outside the influence of pavement, as defined by Standard Detail L-6309E, except as herein modified..

Provide suitable backfill material native to the project, or granular backfill material conforming to the requirements of ~~Section 304.02 or Section~~ Item 703.11. Do not use

RPCC for any bedding or backfill material. Dispose of excavated material unsuitable for backfill ~~compacting~~ at no additional cost to the City. Provide granular backfill material from somewhere else. Spread material in successive layers not exceeding a depth of 8 inches. Compact from above the initial backfill to within 6 inches of the existing ground. The following requirements apply to granular material conforming to Section 304.02, Section 703.11, and to native material:

Max. Lab. Dry Wt. Lbs./cu. Ft.	Min. Compaction Requirements % Lab. Max.
90-104.9	102%
105-119.9	100%
120 and more	98%

Backfill the remaining 6 inches of excavation with approved material without mounding of fill. Maintain trenches in good and safe condition up to the time of acceptance of the work.

Backfill traveled areas in accordance with Section 801.11.

801.14 Hydrostatic Tests

Page 798

801.14 Hydrostatic Tests. Apply a hydrostatic test to the mains and fire hydrant leads as required in Section 5 of the Standard AWWA Specification C600 for Ductile Iron Pipe, Section 4 of AWWA Specification C604 and M11 for Steel Pipe or AWWA M9 for Concrete Pipe. Test all new services to the curb stop. Test each valved section of water main independently of one another unless otherwise approved by the Engineer. Conduct pressure test with all watch valves open and hydrant foot valves closed. Maintain 150 psi of pressure in any tested section for a minimum of two hours. ~~Maintain 150 psi of pressure in any tested section.. Test for at least two hours, except when the test indicates zero leakage after the first hour. The City may approve termination of the pressure test after one hour with zero leakage.,~~ Furnish all materials, make all taps required and furnish a pump, metering equipment, piping, other equipment and all necessary assistance for conducting the tests.

801.16 Main Shuts

Page 800

801.16 Main Shuts. Prior to the start of proposed water main improvement, submit a plan and an accompanying schedule identifying the location and estimated dates for water main shuts to the Division of Power and Water for approval.

Only Division of Power and Water personnel will operate valves. Operation of existing valves by the Contractor or their representative may result in penalties as identified in Chapter 1113 of the City Code.

Notify Division of Power and Water personnel at least 72 hours in advance to the

actual water main shut. Notify and coordinate water main shuts with all affected customers. City personnel will work with the Contractor in identifying affected customers and will provide a sample notification letter. The City will approve the final notification letter. The Division of Power and Water personnel may re-schedule the main shut at its discretion if the Contractor appears unprepared to perform the work scheduled during the shut.. The City will not pay for costs associated with lost time due to lack of preparation by the Contractor. At a minimum, notify critical users (large 801.17 businesses, hospitals, medical centers, industries, etc.) of non-shuts due to rescheduling or delays in the work.

To minimize impacts to customers, the City may require the Contractor to make shuts at night. Include costs incurred to perform contract work after regularly scheduled hours due to main shuts and all cost associated with coordinating shuts with the City in Item 801.

No shuts are permitted to occur on or one (1) business day before a National Holiday or National Holiday weekend, unless otherwise approved by the Engineer.

809.02 Description of Fire Hydrants

Page 815

809.02 Description of Fire Hydrants.

7. **Paint.** Provide hydrants with two good coats in a gloss enamel of one color for the entire hydrant. The color shall be Safety Orange. After installation of the fire hydrants, the contractor is responsible to apply touch-up paint to any damage to the factory-applied hydrant paint. Hydrants will not be accepted until any paint damage from shipping or installation has been repaired. Use hydrant touch-up paint in accordance with the approved material list.

~~7. **Paint.** Provide hydrants with two good coats of special yellow hydrant enamel, with the top 4 inches (102 mm) of the hydrant from operating nut down painted flat black.~~

809.03 Installation

Page 816

809.03 Installation. Furnish and install hydrants at the locations shown on the plans. Locate hydrants 2 feet behind the back of the curb line or 8 feet from the edge of paved area on non-curbed roadways unless otherwise shown on the plans or directed by the Engineer. Provide hydrants of the proper length to suit the depth of cover over the water lines at the locations shown on the plans and furnish the necessary extensions to obtain the proper length. Locate fire hydrants a minimum of 6 feet clear of all driveway openings and curb returns. Install and restrain a second watch valve within 2 feet of the hydrant if the hydrant lead exceeds 15 feet in length.

Excavate the pit or trench for the fire hydrant so when t installed, the hydrant base rests on a concrete slab on undisturbed soil. Set the hydrant plumb with nozzle outlet

approximately 18 inches from ground line. Set hydrants set in accordance with grade line or approximately 2 inches below bottom of break connection on the hydrant standpipe.

Install fire hydrants with hardwood backing against Class "C" concrete backing poured against undisturbed earth, as approved by the Engineer.

Any fire hydrant used between the dates of September 15th and April 15th shall be pumped dry to the foot valve of the hydrant barrel or a minimum of five (5) feet below the surface of the existing ground, by the contractor, immediately after each time the hydrant is operated or after initial installation.

901.02 Materials and Material Handling

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901.02 Materials and Material Handling. Provide pipe of the size and kind specified in the proposal and shown on the plans and meeting the requirements of the relevant parts of Section 706, Section 720 or Section 801. If the proposal or plans do not specifically itemize the type of pipe , the Contractor may use pipe from its list of approved manufacturers. The City will maintain a list of current Approved Manufacturers, Product Types and Sizes, and Authorization Letters on file at the Laboratory.

Provide specific materials as follows unless otherwise specified in the Contract Documents:

1. Concrete for encasement, cradle, backing and backfill Class A 499, 905
2. Concrete for blocking - Class C 499
3. Stone or gravel bedding - No. 57 703
4. Compacted granular material 912.02
5. Cement for mortar 701
6. Sand for mortar 703.03
7. Lime for mortar 712.04
8. Gaskets for Concrete Pipe Joints 901.15
9. Gaskets for Vitrified Clay Pipe Joints 901.15
10. Gaskets for PVC Pipe Joints..... 901.15
11. Gaskets for Ductile Iron Pipe Joints 901.15
12. Non-Reinforced Concrete Pipe 706.01
13. Reinforced Concrete Pipe 706.02
14. Reinforced Elliptical Concrete Pipe 706.04
15. Vitrified Clay Pipe, Extra Strength 706.08
16. Polyvinyl Chloride (PVC) Sewer Pipe 720
17. Ductile Iron Pipe 801.03
18. Precast Reinforced Concrete Box Sections 706.05
19. High Density Polyethylene Pipe (HDPE) 720
20. High Density Polypropylene Pipe (HDPP) 720

Exercise care in material handling to prevent field and installation damage that could impair the function and durability of the installation. In particular, carefully handle thermoplastic conduits during cold weather.

901.11 Bedding and Embedment
Page 826 - 827

901.11 Bedding and Embedment. Place cutoff trench dams of native clay or impervious soil across and along the trench at 150 foot (45.7 m) intervals. Place at least 1 trench dam between adjacent manholes regardless of spacing. Compact the trench dams 6 feet (1.8 m) in length, as measured along the sewer centerline and bench into the undisturbed trench sides from the subgrade or top of cradle, to within 5 feet (1.5 m) of the existing surface. If constructing trench dams in rock or hardpan, extend to the top thereof whichever is greater. Where pipe cover is less than 5 feet, (1.5 m) ~~the~~ extend the dam to within 1 foot (0.3 m) of the existing surface. Provide the trench dam installation with a minimum of 3 feet (0.9 m) of compacted material above the crown of the pipe.

Type I.

1. For flexible sanitary and storm sewers 6 inches (152 mm) in diameter up to and including 60 inches (1524 mm) in diameter, provide a bedding of No. 57 stone, conforming to Item 703.08, ~~or compacted granular material in accordance with Section 912.02~~ extending from a point 4 inches (101 mm) below the bottom of the pipe to a point ~~12~~ 6 inches (~~305~~ 152 mm) above the outside top of pipe as shown on the standard drawings.

2. For rigid sanitary and storm sewers 6 inches (152 mm) in diameter up to and including 27 inches (685 mm) in diameter, provide a bedding of No. 57 stone, conforming to Item 703.08, ~~or compacted granular material in accordance with Section 912.02~~ extending from a point 4 inches (102 mm) below the bottom of the pipe to spring line of the pipe as shown on the standard drawings.

3. For rigid sanitary and storm sewers 30 inches (762 mm) in diameter up to and including 108 inches (2743 mm) in diameter, provide a bedding of No. 57 stone, conforming to Item 703.08, ~~or compacted granular material in accordance with 912.02~~ extending from a point 6 inches (152 mm) below the bottom of the pipe to the spring line of the pipe as shown on the standard drawings.

If using Type I bedding, include the cost of all bedding as described above in the price bid for the various pipe items. ~~If compacted granular material fails to meet the compaction required under Section 912.03, under pipe haunches and around the pipe, the Engineer will direct the use of stone bedding, No. 57, in lieu of compacted granular material at no additional cost to the City.~~

Provide embedment for thermoplastic pipe used in areas where lateral soil support is negligible or questionable in accordance with the recommendations of ASTM D2321 Appendix XI Commentary.

901.12 Laying Pipe
Page 827 - 828

901.12 Laying Pipe. Examine each pipe for defects and damage. Do not use defective or damaged pipe. Lay pipelines to the grades and alignment indicated. Provide proper facilities for lowering sections of pipe into trenches. Do not, under any circumstances lay pipe in water or when trench conditions or weather prove unsuitable for such work. Provide for the diversion of drainage or dewatering of trenches during construction as necessary. Inspect all pipe in place before backfilling, and remove and replace those pipes damaged during placement.

Lay pipes in finished trenches starting at the lowest point so that the spigot ends point in the direction of flow. Lay all pipes with ends abutting and true to line and grade.

Where necessary with bell end pipe, excavate suitable bell-holes in the bedding material for the bell of each pipe so that the bells will not support the weight of the pipe. Fit and match the pipes so that when placed, they will form a conduit with a smooth and uniform invert. Use all possible care when shoving the pipes together to minimize the joints and carefully clean the pipe ends before placing the pipes. Install gaskets in accordance with the manufacturer's recommendations.

Use Class A concrete encasement, in accordance with ~~to~~ the applicable dimensional standard drawing, within the limits of existing or proposed paved areas inside right-of-way, where minimum cover during construction or proposed cover over the outside top of the pipe to top of finished grade is ~~48~~ 36 inches (~~762~~ 914 mm) or less.

Make all connections with existing structures after cleaning the structures in a thorough, first class, neat and workmanlike manner acceptable to the Engineer. Include the cost of this work in the price bid for the various pipe items.

901.15 Pipe Joints
Page 829

901.15 Pipe Joints.

Sanitary Sewers

Concrete. Provide pipe joints conforming to the requirements of ASTM C 443 and as specified herein. Use solid gaskets of circular cross section confined in an annular space formed by the shoulder on the bell and spigot or in the groove in the spigot of the pipe so that movement of the pipe or hydrostatic and hydrodynamic pressure cannot displace the gasket. When the joint is assembled, compress the gasket to form a watertight seal.

Provide all elliptical reinforced concrete pipe for sanitary sewers with Type B - mortar joints and ASTM C 877 rubber and mastic sealing band.

Vitrified Clay. Provide pipe joints conforming to the requirements of ASTM C 425 Compression Joints for Vitrified Clay Bell and Spigot Pipe.

Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe. Provide pipe joints conforming to the requirements of ASTM D 3212.

Ductile Iron. Use mechanical or push on joints meeting AWWA C111 or restrained joints meeting AWWA C110 or C153.

Polypropylene Sewer Pipe. Provide pipe joints conforming to the requirements of ASTM D 3212.

Storm Sewers

Concrete. Use pipe joints conforming to one of the following:

Type A Rubber Gasket. Meet the requirements of ASTM C 443.

Type B Mortar. On sewers 30 inches (762 mm) in diameter and larger, lay the groove end of the pipe to line and grade and wash with a wet brush and butter the bottom half of the groove with 1 to 2 Portland Cement mortar. Clean the tongue of the next section of pipe with a wet brush and apply a layer of 1 to 2 Portland Cement mortar to the top half of it. Then fit the tongue end of the second pipe into the groove end of the first pipe until the mortar is squeezed out onto the inner and outer surfaces. Point the inner surface of the pipe at the joint and smooth with a long handled brush. Point the outside with a bead of mortar. If the joint opening on the bottom half of the pipe exceeds 1/2 inch (13 mm), fill with 1 to 2 Portland Cement mortar.

Type C Bituminous pipe joint filler. Meet the requirements of Section 706.10.

Type D Preformed butyl rubber material. Meet the requirements of 706.14. For concrete pipe 78 inch (2.0 m) diameter and over, prime the annular mating surfaces.

Vitrified Clay. Construct pipe joints conforming to one of the following:

Type A Compression. Meet the requirements for vitrified clay pipe joints used in sanitary sewers as specified herein.

Type C Bituminous filler. Meet the requirements of 706.10.

Type D Preformed butyl rubber material. Meeting the requirements of 706.14.

High Density Polyethylene/Polypropylene. Construct pipe joints conforming to one of the following:

Type A pipe joints. Meet the requirements of ASTM D 3212.

Type B pipe joints. Meet the requirements of AASHTO M-252, M-294, and Section 23 of the Standard Specification for Highway Bridges, Division II. Construct joints "silt tight" with bell and spigot connection. Provide bells either integrally joined to the pipe, or with separate sleeves (double-belled) designed to join the pipe in the field. The Contractor may use split couplings or separate sleeves to make field repairs.

For all elliptical reinforced concrete pipe for storm sewers, use Type B – mortar or, Type C Bituminous pipe joint filler. Where conditions dictate the use of other types of joints, the City will note such on the plans.

The Contractor may use preformed rubber coupling rings, Fernco 5000 series or approved equal, if approved by the Engineer, when performing field repairs on both rigid and flexible pipes for both sanitary and storm sewer applications. Ensure the rubber

sleeve and steel bands make a tight seal capable of meeting the leakage requirements as specified in Item 901.20. Use preformed rubber coupling rings, Fernco 5000 series, only to join pipe of similar material. Perform all installations of the Columbus standard drawings.

When connecting pipes of dissimilar materials, use the type of coupler specifically manufactured for making the connection between said materials (i.e. concrete to clay, clay to plastic, etc.). Complete the repair by removing the existing pipe to the nearest structurally sound joint and install the new pipe in accordance with all applicable sections of Item 901. Sawcut existing pipe in a neat workmanlike manner, making the cut perpendicular to the longitudinal axis of the pipe. Include the cost of this work in the price bid for the various pipe items, unless directed otherwise by the Engineer.

901.20 Leakage Tests
Page 832

901.20 Leakage Tests. Acceptance testing of all sanitary sewers shall require a 30 day waiting period from the date of final backfilling. This shall include all laterals installed as part of mainline construction. Do not exceed the allowable limits of leakage for all completed and installed sanitary and storm sewer pipe as follows:

912.02 Materials
Page 851

912.02 Materials. Use the following materials:

Unless otherwise shown, specified, or ordered, provide granular material meeting the requirements of Section 703.11, incorporated in an 8 inch (203 mm) layer. ~~Granular material consisting of natural or synthetic mineral aggregate such as broken or crushed rock, gravel, slag, sand or cinders incorporated in an 8 inch (203 mm) layer, and conforming to the gradation specified in Section 703.11, Type 1.~~

The Contractor may use controlled density fill mixes as an alternate to compacted granular material, conforming to the requirements of Item 613.

Do not use RPCC as bedding, initial backfill, or final backfill material for any metal sewer pipe installation.

912.03 Compaction Requirements

Page 851

912.03 Compaction Requirements. Apply the following compaction requirements to granular materials and to native backfill materials if such materials require compaction in accordance with Item 911.

Max. Lab. Dry Wt. Lbs./cu. Ft. (kg/m3)	**Min. Comp. Requirements % Lab. Max.**
90-104.9 (1442-1680)	102%
105-119.9 (1682-1920)	100%
120 and more (1922)	98%

Consider materials having a maximum laboratory dry weight of less than 90 lbs./cu. ft. (1442 kg/m3) unsuitable for backfill~~compaction~~. Spread soil, granular material, or other approved material in successive level layers of a depth to allow compaction to the specified density and of not more than 8 inches (203 mm) in thickness (loose measurement), unless otherwise specified and/or authorized in writing by the Engineer.

Cooperate to the fullest extent to accommodate compaction tests. The City will not pay for delay or time lost due to verification of compaction required.

REVISED ON A QUARTERLY BASIS, OR AS NEEDED.

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451.07 Placing Reinforcement
Page 248

451.07 Placing Reinforcement. Place pavement mesh of the size and at the locations within the concrete slab shown on ~~the~~ ODOT standard construction drawing~~s~~ BP-1.1.

630.02 Materials
Page 513-514

630.02 Materials. The acceptance of materials and products is based on Certified Test Data, furnished in triplicate, or on test results of samples according to 106.02, as required by the Engineer.

Transfer manufacturers' guarantees or warranties on all traffic sign material to the City or other maintaining agency upon completion and acceptance of the project.

Furnish materials conforming to:

Concrete, Class C..... 499, 511
Steel:
Structural steel..... 711.01
Reinforcing steel 509.02
U-channel posts..... 730.015
Square posts 730.016
~~Wooden Box Beam ..... 730.017~~
Street name sign supports…….....730.017
Tube and pipe..... 730.01
Anchor bolts and nuts 730.02
Poles and arms 730.03
Base and arm plates..... 730.04
Handhole covers..... 730.05
Pole caps..... 730.06
Arm caps 730.07
Hardware..... 730.08
Stainless steel 730.09
Stainless steel hardware 730.10
Messenger wire 732.18
Aluminum:
Sheet and plate 730.11
Extrusions..... 730.12
Tube and pipe..... 730.13

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Castings..... 730.14
Forgings 730.15
Welding rods 730.16
Hardware 730.17
Other materials:
Decals 725.21
Reflective sheeting, Type F..... 730.18
Reflective sheeting, Type G..... 730.19
Reflective sheeting, Type H..... 730.192
Reflective sheeting, Type J 730.193
Nonreflective sheeting 730.20
Silk screen inks 730.22
Transparent electronic cuttable films 730.23
Cantilevered offset brackets……730.24

630.04 Sign Fabrication
Page 514-516

630.04 Sign Fabrication. Sign types include flat sheet, double faced, extrusheet, and temporary overlay. Flat sheet signs consist of one-piece units made of aluminum. Double faced signs consist of flat sheet aluminum or extruded aluminum blanks with legend on both sides. Extrusheet signs consist of a number of horizontal panels assembled to form a complete sign. Temporary overlay signs consist of an aluminum sheet covering portions or entire surfaces of extrusheet signs.

Prior to reflective sheeting application, clean aluminum sign surfaces either by total immersion in a tank containing an alkaline solution of the manufacturer's specification or by steam cleaning with an alkaline solution of the manufacturer's specification, followed by a thorough rinsing with running water. After cleaning, etch the surface with an acid solution, and dry. Do not allow cleaned and etched surfaces to become contaminated by contact with oil or grease. Drill or punch bolt holes to finish size.

Use sign legends according to the (a) City Sign Design Manual, (b) OMUTCD and (c) the ODOT Sign Design Manual. In case of a conflicting specification statement, the specification document hierarchy shall be in the order listed from (a), highest, to (c) lowest. Use Clearview font for positive contrast legends on freeway and expressway guide signs and on all other guide signs when permitted in the ODOT Sign Design Manual and City Sign Design Manual, respectively. Use capital legends and upper/lower case legends in accordance with the City Sign Design Manual. When either is permitted in the City Sign Design Manual, use upper/lower case legends.

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For flat sheet, double faced mile marker, double faced street name and ground mounted extrusheet signs, use Type G, H or J reflective sheeting for background and reflective legends. For overhead extrusheet signs, use Type H reflective sheeting for the background, and use Type H reflective sheeting for reflective legends, shields and symbols (including hazardous cargo plate, airport symbol, arrows and borders). Apply reflective sheeting to the surface according to the manufacturer's recommendations, with no blisters, wrinkles, tears, or blemishes. Do not use reboundable or damage control sheeting for permanent signs.

For reflective legends on flat sheet, double faced street name signs and double faced mile marker signs, use reverse silk screen transparent ink or electronic cuttable film. For nonreflective legends, use direct silk screen black ink or direct applied nonreflective black sheeting copy. For double faced mile marker signs, use flat sheet aluminum and apply reflective sheeting and legend to both sides.

Street Name Sign faces shall be bonded to 0.063 inch (1.6 mm) thick sign blanks according to the sheeting manufacturers' recommendation. There shall be 2 sign faces on each sign blank, 1 on each side, unless otherwise noted. Street name legends shall be printed in heights of 4" on 9" blade, 6" on 12" blade, and 8" on 18" blades (102, 152 and 203 mm) upper and lower case. Standard FHWA Series D 2000 EX lettering shall be used on all signs 9" and 18" blades and FHWA Series C 2000 EX lettering for all 12" sign blades. Prefixes and suffixes shall be printed in heights of 2, 3, and 4 inch (50, 76, and 102 mm) upper and lower case. All letters shall be centered on the vertical dimension and the legend will be centered on the various sign blades horizontally. Street name letter heights will be as follows: 4 inch (102 mm) legend with 2 inch (50 mm) prefix and suffix on a 9 inch (228mm) blade, 6 inch (152 mm) legend and 3 inch (76 mm) prefix and suffix on a 12 inch (305 mm) blade, and an 8 inch (203 mm) legend and 4 inch (102 mm) prefix and suffix on an 18 inch (457 mm) blade. The minimum distance between the edge of the sign and the first or last letter of the street name, prefix, or suffix shall be 4 inch (102 mm). See City of Columbus Standard Drawing(s) for fabrication of street name signs.

Extrusheet panels consist of flat sheet aluminum reinforced with aluminum extrusions attached by spot welding. The Contractor may use panels extruded in a single operation in lieu of extrusheet panels. Do not use extruded panels and extrusheet panels in the same sign. Bolt together the minimum number of full length, sheeted panels to achieve the sign height, using aluminum bolts, washers, lock washers and nuts. For reflective legends, shields and symbols (including hazardous cargo plate, airport symbol, arrows and borders) use direct applied reflective sheeting. Apply all reflective legend on a sign with the same rotation angle orientation. For nonreflective legends, use direct applied nonreflective black sheeting copy.

For temporary overlay signs, use 0.063-inch thick flat sheet aluminum, with a maximum panel size of 8 × 4 feet. Apply sheeting and legend as described above for extrusheet signs. Attach temporary overlays to extrusheet signs in the shop or field using aluminum blind rivets at a

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maximum spacing of 18 inches on the peripheries of the temporary overlays and 24 inches within the interior. Position rivots so as not to disturb the legend on the underlying sign.

Use fluorescent yellow green reflective sheeting for the following signs: SCHOOL (S4-3), School Crossing (S1-1), yellow portions of school speed limit (S5-H3, S5-H4, S5-H5), SCHOOL ENTRANCE (S3-H3), SCHOOL BUS STOP AHEAD (S3-1), SCHOOL BUS TURN AHEAD (S3-H2), Bicycle Crossing (W11-1), Pedestrian Crossing (W11-2), Handicap Crossing (W11-9), SAFETY ZONE (W11-H15), and Playground (W15-1). Fabricate supplemental signs [such as SHARE THE ROAD (W16-1), Advisory Speed Plate (W13-1), Distance Plates (W16-2, W16-2a, W16-3, W16-3a), Supplemental Arrows (W16-5p, W16-6p, W16-7p and AHEAD Plate (W16-9p)] from fluorescent yellow green sheeting when used with a sign above.

Use fluorescent yellow reflective sheeting for all yellow signs, yellow portions of multi-colored signs, and yellow sign post reflectors, except for signs and portions of signs required to be fabricated with fluorescent yellow green reflective sheeting.

For lighted signs, cover glare shield and rectangular luminaire support tube with nonreflective sheeting matching the predominant sign color.

Place identification decals of Type G silver white reflective sheeting with silk screened black numerals on signs in accordance with Figure 1. These sign identification decals shall be 6 inches by 3 inches in size and positioned so they can be read horizontally and are clearly visible, not near bolt holes or rivets. Place the decals on the back side of the sign in the lower right-hand corner of rectangular signs, or in an equivalent location of other sign shapes, approximately 3 inches from side and bottom sign edges (for smaller signs, these dimensions may be less).

The Engineer will reject signs delivered at the site without a properly applied decal. At the time of sign installation, indicate the installation data by scratching out the appropriate month and year. Do not allow the sign installation contractor to erect any such signs, or overlays, that do not have a properly completed and affixed sign decal.

630.06 Sign Supports

Page 517-518

630.06 Sign Supports. Sign supports consist of ground mounted, rigid overhead, span wire, and overpass structure mounted types. Fabricate sign supports according to the applicable requirements of Item 513, and weld according to 513.21. The approval of fabricators according to 501.03 will not apply. Hot-dip galvanize steel structural members according to 711.02. Galvanize steel hardware according to 730.08.

Tighten threaded fasteners, except anchor bolt nuts, by the “turn of the nut” method according to 513.20.

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Furnish anchor bolts with a leveling nut, plain washers, lock washer, and anchor nut conforming to 730.02. Use anchor nuts with a plain washer against the base plate upper surface and a lock washer between the plain washer and anchor nut.

Tighten anchor bolt nuts according to 513.20, except that under Table 513.20-3, use the "nut rotation from snug tight condition" from 1/12 to 1/6 turn instead of 1/3 turn.

Apply anaerobic adhesive complying with Federal Standard MIL S 46163, Type II, Grade N to anchor bolts and other threaded connections 1/2-inch (13 mm) diameter or larger, according to the manufacturer's recommendations. Do not use anaerobic adhesive with torque-limiting nuts.

Submit alternate designs or materials for sign supports for acceptance at least 21 days in advance of a bid opening date. The Director will give notification of the acceptance or rejection of the alternate design to the bidder at least 7 days in advance of a bid opening date.

A. Ground Mounted Supports. Ground mounted supports consist of structural sections of the material and weights required. Drive the ground mounted supports into the earth or embed them in concrete, as specified. Install supports in exposed locations in accordance with the performance requirements of NCHRP 350.The support lengths shown on the plans are approximate. Determine the exact length of supports before fabrication.

1. Post Supports. Mark each driven post with a line of paint 6 inches above the specified driving depth. Drive posts to the specified depth without bending, distortion, or end mutilation. Do not splice posts. Do not place posts in drainage ditches. If unable to install the post at the specified location, relocate the post with the Engineer's approval at no cost to the City.

Install posts located in paved areas through a hole provided by sleeving or core drilling. After the post is in position, patch the hole with a non-shrink grout; except when the hole is in asphalt, patch with bituminous material.

For groupings of flat sheet signs in multiple arrangements mounted on posts, provide sign backing assemblies.

For temporary sign supports and their placement, conform to the OMUTCD.

2. Structural Beam Supports. Furnish ground mounted structural beam supports from rolled steel sections. The alternate design shown on ODOT Standard Drawing TC-41.10 is not acceptable in the City of Columbus. Furnish slip base connections when specified. Bolt the pieces of each beam together, and preload the assembly bolts before delivery to the project. Carefully handle assembled breakaway beams during transportation and erection. Upon erection, perform the final specified torquing on all threaded fasteners.

At least 4 weeks after erecting signs on breakaway beams, inspect the breakaway feature for evidence of shifting or loose fasteners. Re-torque all loose fasteners to specified values. Loosen and re-torque slip base plate fasteners even if no shifting or looseness is detected. However, if the base plate connection was made with torque limiting nuts, re-torque only if looseness is

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detected. Apply anaerobic adhesive to the re-torqued conventional nuts, or, as an alternate, use new torque limiting nuts with the proper range.

3. Pipe Supports. Furnish ground mounted pipe supports from structural steel pipe and tubing. Furnish bolt down anchor installations in existing concrete. Furnish triangular slip base connection when specified.

~~**4. Wooden Box Beam Supports.** Furnish wooden box beam supports from laminated veneers pressure treated with wood preservative. Install breakaway feature after installation when specified.~~

4. Street Name Sign Supports. Supports for double-faced street name signs shall be either 2.5 inch (63.5 mm) nominal post size (NPS) (2.875 O.D. x 0.203 inch wall) (73 mm O.D. x 5 mm) x 14 foot (4.3 m) long post, or 4 inch (102 mm) NPS (4.0 O.D. x 0.226 inch wall) (102 mm x 5.7 mm) x 21 foot (6.4 m) long post fabricated from new, hot dipped galvanized steel pipe in accordance with Section 711.02. All supports shall be embedded in concrete in accordance with 499 Class C, according to 511. The 2.5" (63.5mm) NPS supports shall be concreted in a hole with a minimum depth of 3 feet (0.91 m), and a diameter of 10 inches (254 mm). The post shall have a minimum of 11 feet (3.3 m) above ground level. 4.0 inches (102 mm) NPS supports shall be concreted in a hole with a minimum depth of 4 feet (1.2 m), and a diameter of 10 inches (254 mm). The post shall have a minimum of 14 feet (5.2 m) above ground level. All spoils from installation shall be removed from the worksite. The maximum allowable sign area for a 2 sign installation is 10 square feet (0.95 square meters). If the total street name sign area is greater than 10 square feet (0.9 m2), 1 sign support per sign shall be used. For street name sign support installation and locations see City of Columbus Standard Drawing(s).

630.14 Method of Measurement

Page 521-524

630.14 Method of Measurement. The City will measure Ground Mounted Post Support by the number of feet, and will include driving, hardware for anchor base installation, and furnishing and placing of patching materials for excavations in paved areas.

The City will measure Foundations for ground mounted pipe supports, ground mounted structural beam supports, rigid overhead sign supports and span wire sign supports by the number of each for one pipe, structural beam, pole, end frame or strain pole, and will include excavation, reinforcing steel, concrete, backfilling, and when required the 10 foot foundation section of concrete barrier, and the disposal of surplus excavation.

The City will measure Ground Mounted Structural Beam Support by the number of feet measured from the bottom of the foundation to the top of the sign, and will include furnishing and placing of patching materials for excavations in paved areas.

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The City will measure Ground Mounted Pipe Support by the number of feet measured from the bottom of the foundation to the top of the sign and will include u-bracket, tubing, posts and hardware for sign attachment, bolt-down anchor and furnishing and placing of patching materials for excavations in paved areas.

~~The City will measure Ground Mounted Wooden Box Beam Support by the number of feet, and will include excavation, backfilling, disposal of surplus material, and installation of breakaway feature.~~

The City will measure Street Name Sign Support as the size and number of pipe supports, including excavation and concrete embedment.

The City will measure Street Name Sign as square footage (square meters) of sign blank, including brackets assemblies, mounting fittings and hardware.

The City will measure One Way Support ~~and Street Name Sign Support~~ by the number of feet, and will include driving and furnishing and placing of patching materials for excavations in paved areas.

630.15 Basis of Payment

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630.15 Basis of Payment. The City will not pay for relocating posts from their planned location without prior approval by the Engineer.

The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
630	Each	Ground Mounted Structural Beam Support Foundation
630	Each	Ground Mounted Pipe Support Foundation
630	Each	Rigid Overhead Sign Support Foundation
630	Each	Span Wire Sign Support Foundation
630	Foot	Ground Mounted Support, ___ Post
630	Foot	Ground Mounted Structural Beam Support, ___ Beam
630	Foot	Ground Mounted Support, Pipe
630	Foot	Ground Mounted Wooden Box Beam Support, _____Beam
630	Foot	One-Way Support, ___ Post
~~630~~	~~Foot~~	~~Street Name Sign Support, ___ Post~~
630	Each	2.5 inch (63.5mm) Street Name Sign Support
630	Each	4.0 inch (102mm) Street Name Sign Support
630	Square Foot	Street Name Sign

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630	Foot or Each	Temporary Sign Support, ___ Post
630	Each	Breakaway Structural Beam Connection
630	Each	Triangular Slip Base Connection
630	Each	Overhead Sign Support, Type TC-___, Design___
630	Each	Combination Overhead Sign Support, Type TC-___, Design___
630	Each	Sign Attachment Assembly
630	Each	Luminaire Support Assembly
630	Each	Span Wire Sign Support, Type TC-17.10, Design ___
630	Each	Overpass Structure Mounted Sign Support, Type TC-___, Design___
630	Each	Sign Hanger Assembly, (Span Wire, Mast Arm)
630	Each	Sign Support Assembly, (Pole or Bridge Mounted)
630	Square Foot	Sign, (Flat Sheet, Ground Mounted Extrusheet, Overhead Extrusheet, Temporary Overlay)
630	Each	Sign, Double-Faced, (Mile Marker)
630	Square Foot	Sign Erected, (Flat Sheet, Extrusheet, Temporary Overlay)
630	Each	Sign Backing Assembly
630	Each	Sign Post Reflector
630	Square Foot	Covering of Sign
630	Each	Removal of Ground Mounted(Major) Sign and (Storage, Reerection, or Disposal)
630	Each	Removal of Ground Mounted(Structural Beam, Post, Pipe, Wooden Box Beam) Support and (Storage or Disposal)
630	Each	Removal of Overhead Mounted Sign and (Storage, Reerection, or Disposal)
630	Each	Removal of Overhead Sign Support and (Storage, Reerection, or Disposal), Type TC-___
630	Each	Removal of Overlay Sign

SUPPLEMENTAL SPECIFICATION 1100
Revision Summary
February 1, 2014

(Continued)

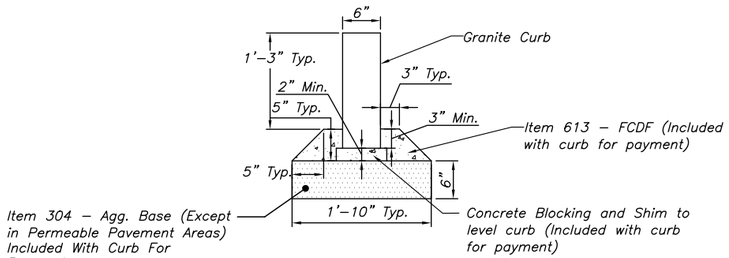
730.017 Street Name Sign Supports (New Section)
Page 736

730.017 Street Name Sign Supports. Provide street name sign posts fabricated from new hot-dipped galvanized steel pipe as in 711.02 and in accordance with ASTM Specification Number A53 with a minimum yield strength of 30,000 psi and a minimum tensile strength of 48,000 psi. Evidence of prior rusting or pitting shall be cause for rejection of the posts. The street name sign post shall have a tubular section of uniform diameter and wall thickness. The diameter and wall thickness shall be for the standard weight (Schedule 40) nominal pipe size (NPS) as specified for each bid item. The finished post shall be straight, have a smooth finish and be free from defects affecting their strength, durability or appearance. All cut ends shall be free from burrs. Each piece shall be continuous with no butt welds.

Provide materials in accordance with the City's QPL.

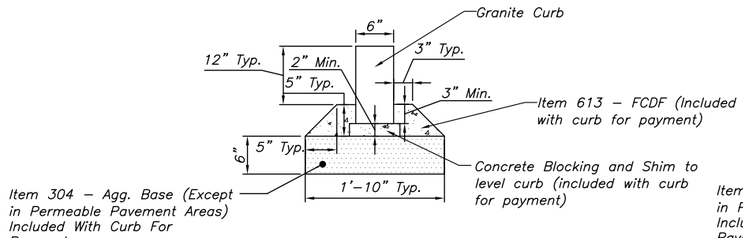
730.24 Cantilever Offset Bracket (New Section)
Page 739

730.24 Cantilever Offset Bracket. Finished street name sign blanks shall be riveted to 2 cantilevered offset bracket assemblies with universal saddle clamps and a double tee section in accordance with 711.01. For signs greater than 48 inch (1.2m) in length, a special assembly is required. This assembly shall consist of 2 cantilevered offset brackets placed back to back and placed on top and bottom of sign assembly and riveted to the appropriate double tee section. The signs shall be attached to the sign supports using a stainless steel buckle-strap combination. For fabrication see City of Columbus Standard drawing(s).



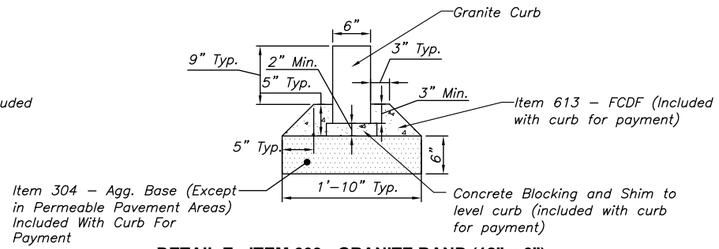
DETAIL C: ITEM 609 - GRANITE CURB (18" x 6")

Not To Scale



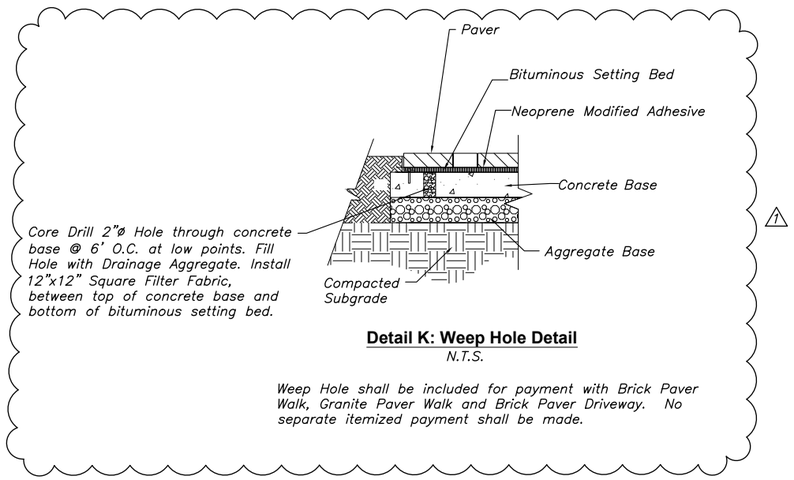
DETAIL D: ITEM 609 - GRANITE BAND (15" x 6")

Not To Scale



DETAIL E: ITEM 609 - GRANITE BAND (12" x 6")

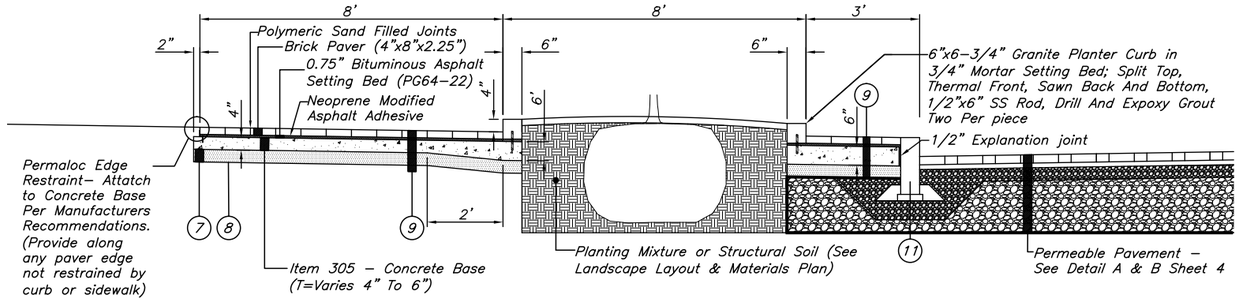
Not To Scale



Detail K: Weep Hole Detail

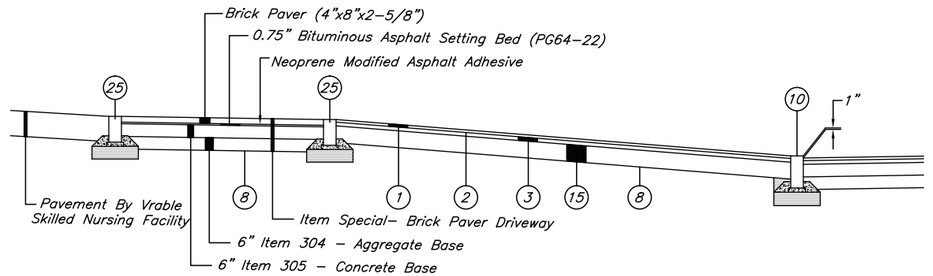
N.T.S.

Weep Hole shall be included for payment with Brick Paver Walk, Granite Paver Walk and Brick Paver Driveway. No separate itemized payment shall be made.



DETAIL F: BRICK PAVER WALK AND GRANITE PLANTER CURB

Not To Scale
See Landscape Layout for Paver Patterns

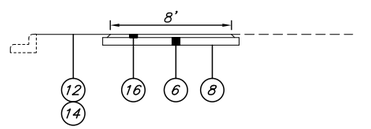


DETAIL G: ASPHALT DRIVEWAY WITH BRICK INSET

Not To Scale
See Landscape Layout for Paver Patterns

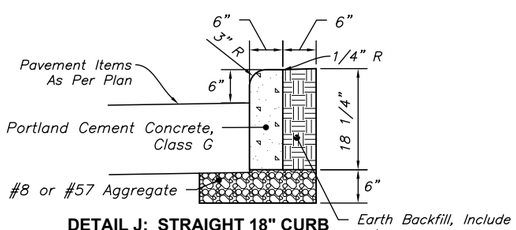
LEGEND

1. Item 448 – 1.25" Asphalt Concrete Surface Course (Medium Traffic), PG64–22
2. Item 407 – NTSS–1HM Trackless Tack Coat for Intermediate Course (0.06 Gal/Sq. Yd.)
3. Item 448 – 1.75" Asphalt Concrete Intermediate Course (Medium Traffic), PG64–22
4. Item 407 – NTSS–1HM Trackless Tack Coat (0.08 Gal./Sq. Yd.)
5. Item 301 – 6" Asphalt Concrete Base, PG64–22
6. Item 304 – 6" Aggregate Base
7. Item 304 – 4" Aggregate Base (Included with Walk for Payment)
8. Item 204 – Subgrade Compaction and Proof Rolling
9. Item SPEC – Brick Paver Walk (See Detail F on Sheet 4)
10. Item 609 – Granite Band (15" x 6") (See Detail D on Sheet 4)
11. Item 609 – Granite Curb (18" x 6") (See Detail C on Sheet 4)
12. Item 653 – Topsoil Furnished and Placed (T=4")
13. Item 609 – Straight 18" Curb (See Detail J on Sheet 4)
14. Item 659 – Seeding & Mulching, As Per Plan
15. Item 304 – 8" Aggregate Base
16. Item 448 – 2.5" Asphalt Concrete Surface Course (Medium Traffic), PG64–22
17. Permeable Clay Pavers (T=2 5/8") (Included for Payment with Permeable Paver Roadway)
18. No. 8 Stone (T=1 1/2") (Included for Payment with Permeable Paver Roadway)
19. Item SPEC – Aggregate Base (No. 57 Stone) (4" Constructed Thickness)
20. Item SPEC – Aggregate Base (No. 2 Stone) (T=16" Min. See Plan & Profile Sheet for Variable Depth)
21. Item SPEC – Permeable Paver Roadway (See Details A & B)
22. Item SPEC – Geogrid (Place Under No. 2 Stone and above Geotextile Fabric on bottom only)
23. Item 204 – Geotextile Fabric, Type D
24. Item 608 – Concrete Walk (T=4")
25. Item 609 – Granite Band (12" x 6") (See Detail E on Sheet 4)



DETAIL H: ASPHALT BIKE PATH REPLACEMENT

Applies to Tuller Ridge Drive
For details not shown, see Dublin SCD RD–06



DETAIL J: STRAIGHT 18" CURB

Not To Scale
For details not shown, see Columbus SCD 2000

REVISION	DATE	DESCRIPTION
1	6–11–14	Added Detail K – Weep Hole Detail

CALCULATED EAM
CHECKED MRB

TYPICAL SECTIONS

JOHN SHIELDS PARKWAY
PHASE 1

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ADDENDUM 1

PROJECT–SPECIFIC GENERAL NOTES (CONTINUED)

ITEM 204 – PROOF ROLLING

The following quantity is provided in the general summary to address locations requiring proof rolling.

Item 204 – Proof Rolling 4 Hour.

ITEM 407 – NTSS –1HM TRACKLESS TACK COAT

Description: This work consists of preparing and treating a paved surface with a specialized anionic trackless asphalt emulsion. Meet all requirements of Item 407 Tack Coat Specification in the CMSC except as noted below.

Material: Conform to the following typical physical properties:

PARAMETER	TEST METHOD	MIN.	MAX.
Saybolt Furol Viscosity, SFS @ 25°C	ASTM D88	15	100
Storage Stability, 24 HRS, %	ASTM D244	--	1
Storage Stability, 5 Days, %	ASTM D244	--	5
Residue by Distillation, %	ASTM D244	50	--
Oil Distillation, %	ASTM D244	--	1
Sieve Test, %	ASTM D244	--	0.3
TEST ON RESIDUE			
Penetration, @ 25°C	ASTM D5	--	20
Softening Point Range Deg.C	ASTM D36	65	--
Solubility, %	ASTM D2042	97.5	--
Original Binder DSR@82°C G*/SIN δ, 10 RAD/SEC	AASHTO T111	1	--

Note: Product should not contain filler such as clay, etc.

Supply certified test data to the Engineer showing the material supplied was tested for and meets the above properties.

Equipment: All requirements of 407.03 shall apply. See Manufacturer's Representative for correct distributor settings. Thoroughly clean all equipment if cationic emulsion was previously used.

Weather Limitations: Do not apply the asphalt material if the surface temperature is below the minimum placement temperature for the pavement course to be placed.

Preparation of Surface: All requirements of 407.04 shall apply.

Application of Asphalt Material: Uniformly apply the asphalt material with a distributor. If product is stored for an extended period of time prior to application, agitate or gently circulate the material.

All nozzles and spray patterns shall be identical to one another along the distributor spray bar. The angle of the nozzle should be placed at a 15 to 30 degree angle to the spray bar axis to maximize overlap or as recommended by the Nozzle Manufacturer. Contact the Manufacturer's representative for required spray nozzle size, and distributor and nozzle settings.

Apply at a rate of 0.04 to 0.08 gallons per square yard. Recommended application temperature is 160°f to 180°f. Do not exceed 180°f.

For irregular areas such as driveways and intersections, apply the asphalt material using a method the Engineer approves. Apply the tack coat in a manner that offers the least inconvenience to traffic and that allows one–way traffic without pickup or tracking. Only apply the tack coat to areas that will be covered by a pavement course during the same day.

The Engineer and Manufacturer's Representative will approve the quantity, rate of application, temperature, distributor settings and areas to be treated before application of tack coat. The Engineer will determine the actual application in gallons per square yard by a check on the project.

The application is considered satisfactory when the material is applied uniformly with no visible evidence of streaking or ridging.

Method of Measurement: As Per 407.08.

Basis of Payment: As Per 407.09. The City will pay for accepted quantities at the contract price as follows:

Item	Unit	Description
407	Gallon	NTSS – 1HM Trackless Tack Coat
407	Gallon	NTSS – 1HM Trackless Tack Coat for Intermediate Course

ITEM 606 – GUARDRAIL, TYPE MGS, AS PER PLAN

This work shall conform to ODOT Item 606 and SCD MGS–1.1 and MGS–2.1 with the added requirement that the rail be painted brown.

ITEM 609 – GRANITE CURB (18 INCH X 6 INCH)
ITEM 609 – GRANITE BAND (15 INCH X 6 INCH)
ITEM 609 – GRANITE BAND (12 INCH X 6 INCH)

This work shall include construction granite curbs and granite bands in accordance with CMSC Item 609, plan details, and Manufacturer's recommendations. Granite curb/band shall be manufactured by North Carolina Granite Company. Color shall be Mt. Airy or Georgia Gray or Approved Equal. Finish shall be as follows:

18"x6" Curb – Split Front and Back, Sawn Sides, Thermal Top
15"x6" Band – Split Front and Back, Sawn Sides, Thermal Top
12"x6" Band – Split Front and Back, Sawn Sides, Thermal Top

Payment shall include all equipment, materials, labor, and incidentals, including but not limited to, granite, aggregate base, concrete blocking, shims, and controlled density fill, to the satisfaction of the Engineer.

ITEM 609 – GRANITE PLANTER CURB (6–1/4 INCH X 6 INCH)

This work shall include construction of granite curbs and granite bands in accordance with CMSC Item 609, plan details, and manufacturer's recommendations. Granite curb/band shall be manufactured by North Carolina Granite Company. Color shall be Mt. Airy or Georgia Gray or Approved Equal. Finish shall be Split Top, Front, and Back, Sawn Bottom.

Payment shall include all equipment, materials, labor, and incidentals, including but not limited to, granite, concrete base, mortar setting bed, and dowels, to the satisfaction of the Engineer.

ITEM 659 – SEEDING AND MULCHING, AS PER PLAN
ITEM 659 – REPAIR SEEDING AND MULCHING, AS PER PLAN

Seed. Certification of grass seed shall be provided by seed vendor for each grass–seed mixture stating the botanical and common name, percentage by weight of each species and variety; and percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Furnish National Turfgrass Evaluation Program (NTEP) data for each species to be used.

Grass seed must be fresh, clean, dry, new–crop seed complying with the AOSA "Journal of Seed Technology" rules for testing seeds for purity and germination tolerances.

Seed species shall be as follows, with not less than 90 percent germination, not less than 90 percent pure seed, and not more than 0.5 percent weed seed.

a. 80 percent tall fescue (festuca arundinacea), with a minimum of 3 improved turf–type varieties. kentucky–31 and Alta varieties are not approved.

b. 20 percent perennial ryegrass (lolium perenne).

Seeding. Sow grass seed at the rate indicated below with a spreader or seeding machine. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

Turfgrass mixture: 7–9 lb. per 1,000 s.f.

Hydro–seeding. Not permitted.

Hydro–mulching. Apply slurry at a rate so that mulch component is deposited at not less than 1,500 lb. / acre dry weight.

Turf maintenance. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, and replanting to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide the same materials and installation as those used in the original installation. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

Mow turfgrass seed mix areas as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Mow areas to a height of 2–3 inches.

ITEM 670 – DITCH EROSION PROTECTION MAT, AS PER PLAN

Ditch erosion protection shall be Aspen Excelsior (Green), Type G per 712.11.

ITEM SPECIAL – INCREASE OR DECREASE IN EXCAVATION OR EMBANKMENT

The adjacent project site (Vrable Skilled Nursing Facility) plans include grading within the project area. This proposed grading has been shown on the cross sections and earthwork calculations have been based upon proposed grades. The following quantity has been included, to be used as directed by the Engineer, to account for variations in earthwork quantities that may arise due to timing of the work or discrepancies between as–built conditions and plan grades:

500 Cu. Yd. Item Special – Increase or Decrease in Excavation or Embankment.

This work shall be performed as directed by the Engineer and in accordance with CMSC Item 203.

ITEM SPECIAL – HEADWALL FOR 36 INCH PIPE REMOVED AND RESET

This work shall include removal of the existing pre–cast headwall at JSP Sta. 667+86, Left, storing onsite, and resetting at the location indicated on the plans. The Contractor shall take care in removal of the headwall to prevent damage. If damage to the headwall should occur during the work, the Contractor shall furnish and install a new headwall conforming to CMSC 604, at no additional cost to the Owner. Payment shall include all equipment, labor, materials, and incidentals necessary to perform the work described above to the satisfaction of the Engineer.

ITEM SPECIAL – DETENTION OUTLET CHAMBER

This item includes completely furnishing and Detention Outlet Chamber and all appurtenances not otherwise quantified. The chamber shall be StormTech MC–3500 or Engineer–approved equal. Installation shall be per Manufacturer's recommendations in addition to the plan details. Measurement shall be per each location installed to the satisfaction of the Engineer. Payment shall include all equipment, labor, materials, and incidentals necessary to complete the work, including, but not limited to, chambers, fabric, end caps, connections, excavation, bedding, and backfill.

ITEM SPECIAL – AGGREGATE BASE (NO. 57 STONE)

This work consists of furnishing, placing, and compacting one or more courses of uniformly graded No. 57 size stone base. Material shall be high quality washed angular limestone and in accordance with CMSC 703. Place stone in lifts of six inches or less and consolidate each lift with a 10–12 ton vibratory roller. Sieve analysis shall be submitted to the City for review. Failure of the gradation to meet specifications shall result in rejection of the material. Payment shall be per cubic yards computed from the profile grade and typical sections consolidated in place.

ITEM SPECIAL – AGGREGATE BASE (NO. 2 STONE)

This work consists of furnishing, placing, and compacting one or more courses of uniformly graded No. 2 size stone base. Material shall be high quality washed angular limestone and in accordance with CMSC 703. Place stone in lifts of six inches or less and consolidate each lift with a 10–12 ton vibratory roller. Sieve analysis shall be submitted to the City for review. Failure of the gradation to meet specifications shall result in rejection of the material. Payment shall be per cubic yards computed from the profile grade and typical sections consolidated in place.

ITEM SPECIAL – GEOGRID

This item includes furnishing and installing Geogrid for permeable pavement. The Geogrid shall be installed over Geotextile Fabric and under Aggregate Base as shown the typical sections. Materials, Shipment and Storage, Construction, and Method of Measurement shall conform to ODOT Supplemental Specification 861. Shipment, Storage, and Construction shall also conform to Manufacturer's recommendations. Item Special – Geogrid shall be paid for by Square Yard of surface area covered by Geogrid, not including required lapping.

1 ITEM SPECIAL – BRICK PAVER WALK (P2)
ITEM SPECIAL – BRICK PAVER DRIVEWAY (P3)
ITEM SPECIAL – GRANITE PAVER WALK (P4, P5, P6 AND P8)

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

Revise subparagraphs below to suit Project.

1. Brick pavers set in bituminous setting beds.
2. Granite pavers set in bituminous setting beds.

1.2 PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

A. Preinstallation Conference: Conduct conference at Project site.

1.3 SUBMITTALS

A. Project Experience: At the date of bid, contractors shall provide the following information (including for each subcontractor):

1. Period of time the company has been performing work comparable to this Project.
2. List of (5) five comparable completed projects, including for each:
   a. Project name and address
   b. Facility contact person including email and telephone number
   c. Project scope

B. Product Data: For the following:

1. Pavers.
2. Bituminous setting materials.
3. Joint sand.

C. Samples for Verification:

1. Submit full depth units of each type of unit paver indicated. Include at least three but no less than the required number of samples in each set for each type of stone to demonstrate the extremes of the full range of color, grain, texture, inclusions, and other visual characteristics expected in completed Work. Samples will establish the standard by which stone provided will be judged.
2. Joint sand in small sealed container.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.

1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C 67.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual with (5) five years experience in installing work similar in material, design, and extent to that indicated for this Project, and whose work has resulted in construction with a record of successful in–service performance.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate the aesthetic effects and set quality standards for workmanship and execution. All mockups shall demonstrate the final appearance of the Work, including approved stone material, finish, joint material, installation tolerances, and final cleaning.

1. Granite Paver Walk: provide four foot by 8 foot mockup of granite pavers as illustrated in Detail 1, Sheet 43, including granite planter curbs.
2. Brick Paver Walk: Construct the first 20 feet of brick paver walk to be installed as a mockup.
3. Notify Construction Manager seven days in advance of dates and times when mockups will be constructed.
4. Obtain Landscape Architect's approval of mockups prior to installation of Work being demonstrated in the mockup.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Landscape Architect specifically approves such deviations in writing.
6. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the quality of workmanship of the completed pavement.
7. Mockups may remain in place as final installation if approved.
8. Mock–ups not conforming to the specified finish and appearance shall be removed and reconstructed at the Contractor's expense.

B. Reference Standards: Stone products shall conform to the following industry standards unless modified by the requirements of the Contract Documents:

1. Granite: NBGQA National Building Granite Quarries Association Specifications for Architectural Granite Version 11–2.

1.6 DELIVERY, STORAGE, AND HANDLING (SEE NEXT SHEET)

REVISION	DATE	DESCRIPTION
1	6–11–14	Revised Notes per Addendum #1

CALCULATED EAM
CHECKED MRB

GENERAL NOTES

JOHN SHIELDS PARKWAY
PHASE 1

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Addendum 1

PROJECT–SPECIFIC NOTES (CONTINUED)

ITEM SPECIAL – BRICK PAVER WALK (P2) (CONTINUED)
⚠1 ITEM SPECIAL – BRICK PAVER DRIVEWAY (P3) (CONTINUED
ITEM SPECIAL – GRANITE PAVER WALK (P4, P5, P6 AND P8) (CONTINUED)

PART 1 – GENERAL (CONTINUED)

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

B. Store liquids in tightly closed containers protected from freezing..

C. Store asphalt cement and other bituminous materials in tightly closed containers.

1.7 FIELD CONDITIONS

A. Cold–Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

B. Weather Limitations for Bituminous Setting Bed:

1. Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.

2. Apply asphalt adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 BRICK PAVERS

A. Brick Paver Walk (P2): Light–traffic paving brick; ASTM C 902, Class SX, Type I, Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.

1. Manufacturer: Endicott Clay Products Company.

2. Thickness: 2–1/4 inches.

3. Face Size: 3–5/8 by 7–5/8 inches.

4. Color: Equal mix of Dark Ironspot and Medium Ironspot #46.

B. Brick Paver Driveway (P3): Heavy vehicular paving brick; ASTM C 1272, Type R, Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.

1. Manufacturer: Endicott Clay Products Company.

2. Thickness: 2–5/8 inches.

3. Face Size: 3–5/8 by 7–5/8 inches.

4. Color: Equal mix of Dark Ironspot and Medium Ironspot #46.

5. Spacer Lugs: 1/8".

6. Edges: Chamfered.

C. Efflorescence: Brick shall be rated "not effloresced" when tested according to ASTM C 67.

2.3 GRANITE PAVERS

A. Granite Pavers: Rectangular paving slabs made from granite complying with ASTM C 615/C 615M.

B. Granite Walk Pavers (6"x24") (P4)

1. Manufacturer: North Carolina Granite Company

2. Color: Georgia Grey.

3. Finish:
   a. Top: Thermal.
   b. Sides: Sawn.
   c. Bottom: Sawn

4. Thickness: 2–1/4 inches.

5. Face Size: 5–5/8 by 23–5/8 inches.

C. Granite Walk Pavers (4"x8") (P5)

1. Manufacturer: North Carolina Granite Company

2. Color: Georgia Grey.

3. Finish:
   a. Top: Thermal.
   b. Sides: Sawn.
   c. Bottom: Sawn.

4. Thickness: 2–1/4 inches.

5. Face Size: 3–5/8 by 7–5/8 inches.

D. Granite Walk Pavers (4"x4") (P6)

1. Manufacturer: North Carolina Granite Company

2. Color: Georgia Grey.

3. Finish:
   a. Top: Thermal.
   b. Sides: Sawn.
   c. Bottom: Sawn

4. Thickness: 2–1/4 inches.

5. Face Size: 3–5/8 by 3–5/8 inches.

E. Granite Walk Pavers (18"x18") (P8)

1. Manufacturer: North Carolina Granite Company

2. Color: Georgia Grey.

3. Finish:
   a. Top: Thermal.
   b. Sides: Sawn.
   c. Bottom: Sawn

4. Thickness: 2–1/4 inches.

5. Face Size: 17–5/8 by 17–5/8 inches

2.4 ACCESSORIES

A. Compressible Foam Filler: Preformed strips complying with ASTM D 1056, Grade 2A1.

2.5 BITUMINOUS SETTING–BED MATERIALS

A. Primer for Base: ASTM D 2028/D 2028M, cutback asphalt, grade as recommended by unit paver manufacturer.

B. Fine Aggregate for Setting Bed: ASTM D 1073, No. 2 or No. 3.

C. Asphalt Cement: ASTM D 3381/D 3381M, PG64–22.

D. Neoprene–Modified Asphalt Adhesive: Furnish neoprene modified asphalt adhesive that contains 2% grade wmi neoprene, oxidized asphalt with a 150 degree softening point (77 penetration), and 10% long–fibered inert material, as supplied by Seidel Company, Inc., Newburyport, MA, (617) 649–6740; Hastings Pavement Company, Inc., Lake Success, NY, (516) 379–3500; or approved equal.

E. Polymeric Sand for Joints: Alliance XXX Gator Sand and beige in color or an approved equal.

2.6 BITUMINOUS SETTING–BED MIX

A. Mix bituminous setting–bed materials at an asphalt plant in approximate proportion, by weight, of 7 percent asphalt cement to 93 percent fine aggregate unless otherwise indicated. Heat mixture to 300 deg F.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 PREPARATION

A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.

B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

C. Provide drainage weep holes placed as specified in the project plans.

D. Concrete base finished surface tolerance shall meet plan grading requirements within (+/–) 1/4 inch as measured with a string line, straight edge, or laser as applicable. Work not meeting specified tolerance shall be remedied by Contractor–submitted corrective measures approved by the Engineer.

3.3 SEQUENCING

A. All temporary and permanent edge restraint, drainage weep holes, manhole and utility covers, and other surface penetrations shall be completed before installation of the pavers.

3.4 GEOTEXTILE

A. Install filter fabric as specified on weep hole. See detailed drawing in plans for weep hole execution.

3.5 PAVERS

A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

C. Cut unit pavers with motor–driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly in such a manner that no paver segment is smaller than one third of a full paver when the cut line crosses a long side and no smaller than one half of a full paver when the cut line crosses both ends. The cut faces shall be vertical. Use full units without cutting where possible. Hammer cutting is not acceptable.

D. Joint Pattern: As indicated on Landscape Layout & Materials Plan

E. Adjust to form uniform joint widths and straight pattern lines after every five feet of progress.

F. Tolerances: Do not exceed 1/32–inch unit–to–unit offset from flush (lippage) nor 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.

G. After a suitable area of pavers has been installed each day, the pavers have been aligned, cut pavers have been positioned and prior to final set of the adhesive, roll the surface of the pavers to set the pavers into place with sufficient pressure to achieve a full bond to the setting bed.

H. Expansion and Control Joints: Provide for sealant–filled joints at locations and of widths indicated. Provide compressible foam filler as backing for sealant–filled joints. Install joint filler before setting pavers.

I. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

1. Install edge restraints along any paver edge not restrained by curb, sidewalk, or multi–use path, etc.

3.6 BITUMINOUS SETTING–BED APPLICATIONS

A. Apply primer to concrete slab or binder course immediately before placing setting bed.

B. Prepare for setting–bed placement by locating 3/4–inch–deep control bars approximately 11 feet apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.

C. Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F. Strike setting bed smooth, firm, even, and not less than 3/4 inch thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth–control bars.

1. Roll setting bed with power roller to a nominal depth of 3/4 inch. Adjust thickness as necessary to allow accurate setting of unit pavers to finished grades indicated. Complete rolling before mix temperature cools to 185 deg F.

D. Apply neoprene–modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch. Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

E. Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.

3.7 JOINT SAND

A. Place unit pavers with hand–tight joints. Sweep dry jointing sand over the surface of the pavers so that it penetrates into the joints and secures the pavers. Remove all surplus sand immediately so that all particles are removed from the chamfers and surface of the pavers.

B. Roll the pavers to settle the sand in the joints, adding additional sand as necessary. Paver joints shall be completely filled with specified sand to the bottom of the brick paver chamfers, or to 1/8 inch below top of paver if not chamfered.

C. On completion of rolling, before and after joint filling, surface tolerances shall not exceed 1/32–inch unit–to–unit offset from flush (lippage) nor 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving. Ponding of water on the surface is not acceptable.

D. Protect joint sand against moisture until the polymeric sand is activated.

3.8 JOINT SAND STABILIZATION

A. The surface of the pavement shall be clean and free from oil, laitance, dust and any loose material prior to activating the polymeric sand.

B. Activate the polymer by misting the surface of the pavers with water in accordance with the manufacturer's instructions.

C. Verify that the bonding of the sand particles has occurred to a minimum depth of 1/2 below the top of the pavers. Where the application results in a patchy sheen, the stabilizer shall be reactivated and worked as necessary to produce an even appearance.

3.9 REPAIRING AND CLEANING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Cleaning: Granite: Comply with NBGQA Specifications for Architectural Granite Version 11–2.

PART 4 – PAYMENT

4.1 BRICK PAVER WALK (P2)

A. Payment for the Brick Paver Walk will be made at the unit price bid per square foot for Item Special – Brick Paver Walk and shall include the concrete base slab (including weep holes and filter fabric, bituminous setting bed, asphalt adhesive, brick pavers, polymeric joint sand, edge restraint, expansion joint material, aggregate base, and subgrade compaction.

4.2 BRICK PAVER DRIVEWAY (P3)

A. Payment for the Brick Paver Driveway will be made at the unit price bid per square yard for Item Special – Brick Paver Driveway and shall include the concrete base slab (including weep holes and filter fabric, bituminous setting bed, asphalt adhesive, brick pavers, polymeric joint sand, expansion joint material, aggregate base, and subgrade compaction.

4.3 GRANITE PAVER WALK (P4, P5 AND P6)

A. Payment for the Granite Paver Walk will be made at the unit price bid per square foot for Item Special – Granite Paver Walk and shall include the concrete base slab (including weep holes and filter fabric, bituminous setting bed, asphalt adhesive, granite pavers, polymeric joint sand, edge restraint, expansion joint material, aggregate base, and subgrade compaction.

PART 5 – WARRANTY

5.1 TERM

A. The Contractor shall warrant the finished paver pavement for a period of two years from the date of final acceptance by the City.

5.2 JOINT SAND LOSS

A. The pavement shall be inspected at the one year anniversary after acceptance by the City; the Contractor shall re–sand (with polymeric joint sand) the areas of joint sand loss as directed by the Engineer.

5.3 CREEP

A. Project shall be inspected for paver creep at the one year anniversary after acceptance by the City; if required, Contractor shall replace pavers and re–sand as directed by the Engineer.

5.4 RUTTING

A. Project shall be inspected for paver rutting at the one year anniversary after acceptance by the City; if required, Contractor shall replace full depth pavement section as directed by the Engineer.

REVISION	DATE	DESCRIPTION
⚠1	6–11–14	Revised notes and added Sheet 7A

CALCULATED EAM
CHECKED MRB

GENERAL NOTES

JOHN SHIELDS PARKWAY
PHASE 1

7A
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Addendum 1

PROJECT–SPECIFIC GENERAL NOTES (CONTINUED)

⚠ ITEM SPECIAL – PERMEABLE PAVER ROADWAY (P1 & P7)

A. General

1. This work consists of installing permeable clay brick pavers, granite pavers, joint aggregate, aggregate setting bed, aggregate base, geogrid, and geotextile fabric on prepared subgrade.

B. Applicable Standards

1. ASTM Standards
   a. C29 Standard Test Method for Bulk Density (Unit Weight) and Voids in Aggregate.
   b. C33 Standard Specification for Concrete Aggregates.
   c. C67 Standard Test Method for Sampling and Testing Brick and Structural Clay Tile.
   d. C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   e. C144 Standard Specification for Aggregate for Masonry Mortar.
   f. C1272 Standard Specification for Heavy Vehicular Paving Brick.
   g. D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft lbf/ft3 (600 kN m/m3)).
   h. D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft lbf/ft3 (2,700 kN m/m3)).
   i. D2940 Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

2. City of Columbus Standards
   a. CMSC Items: 204, 703, 712

3. Manufacturers Installation Specifications shall be adhered to for all materials specified herein unless otherwise specified in the project plans.

C. Submittal Requirements

1. Manufacturer's Information: shall include product information, test results, installation instructions, sieve analysis and MSDS data for the following:
   a. Clay Pavers
   b. Joint aggregate
   c. Aggregate setting bed
   d. Aggregate base
   e. Geotextile fabric
   f. Geogrid
   g. Sieve analysis for grading of bedding and joint aggregates.

2. Samples
   a. Pavers – submit 20 full size samples of each type of permeable clay brick paver and one 4 inch by 12 inch by 2–5/8 inch granite paver roadway sample for testing and verification of size, shape, and color selection.
   b. Extra Materials – the Contractor shall supply to the City two pallets of pavers for future maintenance. Contractor shall coordinate with the City to determine location and timing of delivery.

3. Test Reports
   a. Brick Paver test results or certification from/of each batch (100,000 units or any part thereof) that each batch supplied is compliant with ASTM C1272.

4. Paver Installation Subcontractor Qualifications:
   a. Submit experience record and references for proposed installer indicating that the installer has successfully completed paver installation similar in design, material, and quantity indicated for this project.

D. Materials

1. Permeable Clay Brick Pavers (P1)
   a. Manufacturer: Endicott Clay Products Company.
   b. Clay Pavers shall meet the requirements of ASTM C1272, Type R, Application PX.
   c. Pavers shall be non–effloresced.
   d. Size – all pavers shall have a 2:1 module of plan dimension, and shall measure 8 in. by 4 in. (plus or minus 10 percent). When sixteen pavers are lined up end to end adjacent to 32 pavers lined up side by side, the overall length of each row should not differ by more than 1 in; except where dimensional size and shape are specified in the plans.
   e. Color shall be Manganese Iron Spot
   f. Lugs shall be 1/4 inch.
   g. Chamfers – all pavers shall have chamfered top edges.

2. Granite Paver (P7)
   a. Manufacturer: North Carolina Granite Company
   b. Color: Georgia Grey.
   c. Finish:
      (1) Top: Thermal
      (2) Sides: Sawn
      (3) Bottom: Sawn
   d. Thickness: 2–5/8 inches.
   e. Face Size: 4–5/8 by 73–5/8 inches.

3. Joint Aggregate
   a. Joint aggregate shall be high quality washed angular limestone, and No. 9 size.

4. Setting Bed Aggregate
   a. Setting bed aggregate shall be high quality washed angular limestone, and No. 8 size.

E. Execution

1. Preparation
   a. Areas draining to permeable pavement shall be stabilized with permanent seeding, erosion control measures, or finished pavement prior to preparation of subgrade and installation of base aggregate.
   b. Prepare the subgrade in accordance with Item 204.

2. Base and Setting Bed Installation
   a. Proof–roll subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or granular material as directed.
   b. Place geotextile fabric over subgrade, overlapping ends and edges as needed to comply with plan sections and details.
   c. Place Geogrid over geotextile fabric in accordance with Manufacturer's recommendations and plan details.
   d. Place base aggregate in six inch maximum lifts, consolidate with a 10–12 ton vibratory roller, and screed to depth indicated. Where a vibratory roller is not practical due to physical constraints as determined by the Engineer, a vibratory plate shall be used.
   e. No. 57 aggregate shall be placed to a tolerance of one–half inch prior to placement of No. 8 stone setting bed.
   f. Place setting bed and machine–screed to a thickness of 1–1/2 inches, taking care that moisture content remains constant and density is loose and constant until pavers are set and compacted.
   g. Equipment will not be allowed on setting bed prior to placement of pavers and foot traffic shall be minimized.

3. Paver Installation – Installation shall be per manufacturer's recommendations and as follows.
   a. Cut unit pavers with motor–driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly in such a manner that no paver segment is smaller than one third of a full paver when the cut line crosses a long side and no smaller than one half of a full paver when the cut line crosses both ends. The cut faces shall be vertical. Use full units without cutting where possible. Hammer cutting is not acceptable.
   b. Set unit pavers on setting bed, being careful not to disturb leveling base. Place pavers hand tight against lugs or spacer bars. Use string lines to keep straight lines. See plans for pattern details.
   c. Compact pavers into setting bed with a low–amplitude plate vibrator capable of a 3500– to 5000–lbf compaction force at 80 to 90 Hz. Use vibrator with neoprene mat on face of plate or other means as needed to prevent cracking and chipping of pavers. Perform at least three passes across paving with vibrator.
   d. Compact pavers when there is sufficient surface to accommodate operation of vibrator, leaving at least 36 inches of uncompacted pavers adjacent to temporary edges.
   e. Tolerances: Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/8–inch unit–to–unit offset from flush. Variation from Level or Indicated Slope: Do not exceed 1/8 inch in 24 inches and 1/4 inch in 10 feet or a maximum of 1/2 inch.
   f. Before ending each day's work, compact installed concrete pavers except for 36–inch width of uncompacted pavers adjacent to temporary edges (laying faces). As work progresses to perimeter of installation, compact installed pavers that are adjacent to permanent edges unless they are within 36 inches of laying face. Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and setting bed on which pavers have not been placed with nonstaining plastic sheets to protect them from rain.
   g. Place graded joint aggregate immediately after vibrating pavers into setting bed. Spread and screed joint aggregate level with tops of pavers. Before ending each day's work, place joint filler in installed permeable paving except for 42–inch width of unfilled paving adjacent to temporary edges (laying faces). As work progresses to perimeter of installation, place joint filler in installed paving that is adjacent to permanent edges unless it is within 42 inches of laying face. Before ending each day's work and when rain interrupts work, cover paving that has not been filled with nonstaining plastic sheets to protect it from rain.
   h. As work progresses, remove and replace pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

4. Maintenance and Protection
   a. Erect barricades and warning signs as required to protect newly paved areas from traffic.
   b. Maintain barricaded, warning signs, erosion control measures and finished surface pavement so that permeable unit paving will not receive sediment. If sedimentation of permeable unit pavers does occur, the sediment and graded joint filler shall be removed and replaced with new graded joint filler as specified.

F. Quality Assurance

1. The Contractor shall prepare and submit a method statement to indicate the proposed starting points, direction of operations and progress of works, the installation methods, the pattern dimensional controls to be used, the measures for protecting the work, the quality control procedures to be adopted, and the personnel and equipment to be kept on site at all times.

G. Quality Control

1. First 20–Feet of pavement along one paver parking area is to be installed as test section (Mock–up), the balance of pavement placed on Project shall meet or exceed test pavement.
2. Materials and completed work failing to meet the specified requirements shall be removed from site and replaced to a suitable standard.
3. Rebuild, repair, or build new test sections as directed by Engineer until finally approved by the Engineer.
4. Approval of test sections does not constitute approval of deviations from the Contract Documents, unless Engineer specifically approves such deviations in writing. Mock–ups will be subject to compliance with requirements. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion

H. Method of Measurement

1. The City will measure Item Special – Permeable Paver Roadway by the number of Square Yards completed and accepted in place. Square yardage will be measured at the surface of the pavement.

I. Basis of Payment

1. Payment for Item Special – Permeable Paver Roadway shall include all labor, equipment, materials and incidentals necessary for the described work including, but not limited to, brick pavers, joint aggregate, aggregate setting bed.

2. Base aggregate (No. 2 stone) and choker layer (No. 57 stone) shall be paid for separately.

3. Geotextile Fabric shall be paid for separately.

4. Geogrid shall be paid for separately.

5. Subgrade Compaction shall be paid for separately.

J. Warranty

1. Term: Contractor shall warrant the finished roadway paver pavement for a period of 2–Years from the date of final acceptance by the City.

2. Joint Aggregate Loss
   a. The pavement shall be inspected at the 1st year anniversary after acceptance by the City and the Contractor shall re–apply joint aggregate the areas of joint aggregate loss as directed by the Engineer.
   b. The pavement shall be inspected at 18–Months after acceptance by the City; Contractor shall re–apply joint aggregate the areas of joint aggregate loss as directed by the Engineer.

3. Project shall be inspected for paver Creep at the 1st year anniversary after acceptance by the City; if required, Contractor shall replace pavers and re–apply joint aggregate and seal the creep as directed by the Engineer.

4. Project shall be inspected for paver Rutting at the 1st year anniversary after acceptance by the City; if required, Contractor shall replace full depth pavement section as directed by the Engineer.

LEGEND

ABBREVIATIONS

EXISTING		PROPOSED	
WS	WATER SERVICE	(DND)	DO NOT DISTURB
SS	SANITARY SERVICE	(TBA)	TO BE ABANDONED
GS	GAS SERVICE	(TBR)	TO BE REMOVED
RD	ROOF DRAIN	(TBRL)	TO BE RELOCATED BY THIS PROJECT
OHE	OVERHEAD ELECTRIC	(TBRO)	TO BE RELOCATED (BY OTHERS)
OHT	OVERHEAD TELEPHONE	(APP)	AS PER PLAN
TEL	UNDERGROUND TELEPHONE	(ATG)	ADJUST TO GRADE
CATV	CABLE TELEVISION	(RTG)	RECONSTRUCT TO GRADE

EXISTING CONDITIONS

- CENTERLINE SURVEY
- CENTERLINE EXIST. DRIVE
- EDGE OF PAVEMENT
- CURB
- SHOULDER
- DRIVEWAY
- PARKING LOT
- CONC. WALK
- FENCE
- GUARDRAIL
- RIGHT OF WAY (EX. R/W)
- PROPERTY LINE
- PROPERTY LINE EXTENDED
- LOT LINE (SAME OWNER BOTH SIDES)
- RAILROAD RIGHT OF WAY
- STORM (EX. 12" STM)
- SANITARY (EX. 12" SAN)
- WATER (EX. 12"W)
- GAS (EX. 12"G)
- TELEPHONE (UNDERGROUND)
- ELECTRIC
- ELECTRIC (UNDERGROUND)
- DITCH
- CHAIN LINK/WIRE WOVEN FENCE
- WOOD FENCE
- CATV
- CONC. WALL
- ROCK
- TREELINE
- TREES
- BUSHES
- HEDGE/SHRUB
- STUMP
- CONC. PAD
- WOOD POST
- POST/BOLLARD
- MAILBOX
- FLAGPOLE
- PARKING BLOCK
- BUILDING

EXISTING UTILITY SYMBOLS

- STM. MH
- STM. MH (OPEN GRATE)
- CURB & GUTTER INLET
- CURB INLET
- SAN. MH
- CATCH BASIN
- WATER VALVE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- LIGHT POLE
- TELEPHONE POLE
- TELEPHONE LIGHT POLE
- TELEPHONE ELECTRIC LIGHT POLE
- TELEPHONE ELECTRIC POLE
- ELECTRIC POLE
- LIGHT POLE
- GUY ANCHOR
- TEL. BOOTH
- ELEC. PULLBOX
- TEL. PEDESTAL
- TEL. MH
- LIGHTING CONTROLLER
- SIGNAL POLE MOUNT
- SIGNAL CONTROLER
- PEDESTRIAN PUSH BUTTON
- SIGNS

EXISTING SURVEY SYMBOLS

- I.P.F. IRON PIN FND./METAL BAR FND.
- I.P.F. IRON ROD FND./RR SPIKE FND.
- P.K.F. PK NAIL FND.
- BENCHMARK
- RIGHT–OF–WAY MON. FND.
- I.P.S. IRON PIN SET/MAG NAIL SET/PK NAIL SET/RR SPIKE SET/TRAVERSE DRILL HOLE

PROPOSED LAYOUT

- CENTERLINE CONSTRUCTION
- CENTERLINE PROP. DRIVE
- EDGE OF PAVEMENT
- BACK OF CURB
- FACE OF CURB
- CONC. WALK/ASPH. BIKEPATH
- RIGHT–OF–WAY
- GUARDRAIL
- CONSTRUCTION LIMITS
- PROPERTY LINE
- TEMPORARY EASEMENT
- UTILITY EASEMENT
- SLOPE EASEMENT
- STORM EASEMENT
- STORM (12")
- SANITARY (SAN)
- WATER MAIN (WM)
- ELECTRICAL DUCT BANK (EDB)
- CENTERLINE OF DITCH
- CHAIN LINK / WIRE WOVEN FENCE
- WOOD FENCE

PROPOSED UTILITY SYMBOLS

- (2) STM. MH
- (2) CURB & GUTTER INLET
- (2) CURB INLET
- (SA) SAN. MH
- CATCH BASIN
- WATER VALVE
- FIRE HYDRANT
- LIGHT POLE

REVISION	DATE	DESCRIPTION
⚠1	6–11–14	Revised Notes per Addendum #1

CALCULATED EAM CHECKED MRB

GENERAL NOTES

JOHN SHIELDS PARKWAY PHASE 1

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Addendum 1

CMS	ITEM	TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
				WATER WORKS	
CMSC	801	75	LF	6 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	
CMSC	801	527	LF	8 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	
CMSC	801	10	LF	12 INCH WATER PIPE & FITTINGS WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR BACKFILL	
CMSC	801*	50	CU YD	CONCRETE BLOCKING CLASS C, INCREASE OR DECREASE	
CMSC	801*	50	LB	DUCTILE IRON FITTINGS, INCREASE OR DECREASE	
CMSC	802	3	EACH	6" VALVE AND APPURTENANCES	
CMSC	802	3	EACH	8" VALVE AND APPURTENANCES	
~~CMSC~~	~~803~~	~~1~~	~~EACH~~	~~12" X 8" TAPPING SLEEVE AND VALVE AND APPURTENANCES~~	
CMSC	805	1	EACH	3/4 INCH WATER SERVICE TAP, COMPELTE	
CMSC	807	2	EACH	COLUMBUS STANDARD HEAVY DUTY VALVE BOX	
~~CMSC~~	~~808~~	~~1~~	~~EACH~~	~~CUT AND PLUG 6" WATER SERVICE TAP~~	
CMSC	809	2	EACH	FIRE HYDRANT, TYPE A	
CMSC	811*	50	CU YD	INCREASE OR DECREASE IN EXCAVATION AND BACKFILL	
CMSC	812	1	EACH	1" AIR RELEASE OUTLET	
CMSC	816	1	EACH	6 INCH WATER SERVICE TAP ABANDONED	
CMSC	SPEC	1	L. SUM	SURVEY COORDINATES	
				TRAFFIC CONTROL	
ODOT	630+	56	LF	GROUND MOUNTED SUPPORT, NO. 3 POST, TYPE S, AS PER PLAN	30
ODOT	630+	4	EACH	2 1/4" SQUARE ANCHOR POST, AS PER PLAN	30
ODOT	630+	1	EACH	STREET NAME SIGN SUPPORT, AS PER PLAN	30
ODOT	630+	2	EACH	STREET NAME SIGN, AS PER PLAN	30
ODOT	630+	54	SQ FT	SIGN FLAT SHEET, AS PER PLAN	30
ODOT	630	9	EACH	WOOD POST, 4"x4", WHITE	
ODOT	644	448	LF	REMOVAL OF PAVEMENT MARKING	
ODOT	644	0.09	MI	CENTER LINE, 4"	
ODOT	644	205	LF	CROSSWALK LINE, 12"	
ODOT	644	85	LF	CHANNELIZING LINE, 8"	
ODOT	644	1	EACH	WORD ON PAVEMENT, 72"	
ODOT	644	1	EACH	LANE ARROW, 72"	
ODOT	644	11	LF	STOP LINE, 24"	
				LIGHTING	
ODOT	625	112	LF	CONDUIT, 3", 725.051, SCH 80, SLEEVE	
ODOT	625	533	LF	CONDUIT, 3", 725.051, SCH 40	
ODOT	625	222	LF	CONDUIT, 2", 725.051, SCH 40	
ODOT	625	110	LF	CONDUIT, JACKED OR DRILLED, 3", 725.051, SLEEVE	
ODOT	625	645	LF	TRENCH (SL-05)	
ODOT	625	645	LF	PLASTIC CAUTION TAPE (SL-05)	
ODOT	625	7	EACH	PULL BOX, 725.08, 18"x11"x18" QUAZITE PG1118BG18 OR APPROVED EQUAL	
				AEP DUCT BANK	
CMSC	SPEC	370	FT	6-5 INCH PVC, SCHEDULE 40, CONDUIT CONCRETE ENCASED IN TRENCH WITH CMSC 912 COMPACTED GRANULAR MATERIAL	32
				LANDSCAPING	
-	SPEC	304	CU YD	PLANTING SOIL PLACED	35
-	SPEC	30	CU YD	STRUCTURAL SOIL PLACED	35
-	SPEC	15	EACH	DECIDUOUS SHADE TREES	41
-	~~SPEC~~	~~3283~~	~~SQ FT~~	~~LANDSCAPE PLANTINGS~~	~~41~~
-	SPEC	7337	EACH	PERENIAL PLANTINGS	41,42
-	SPEC	7337	EACH	BULB PLANTINGS	41,42
				MISCELLANEOUS	
DUBLIN	108.03	1	L. SUM	TYPE B - CRITICAL PATH METHOD (CPM) SCHEDULE	
CMSC	614	1	L. SUM	MAINTAINING TRAFFIC, AS PER PLAN	11
CMSC	623	1	L. SUM	CONSTRUCTION LAYOUT STAKES	
CMSC	624	1	L. SUM	MOBILIZATION	
CMSC	SPEC	1	L. SUM	PROOF SURVEY	6

Notes:

CMSC = City of Columbus Construction and Material Specifications, 2012 Edition

ODOT = Ohio Department of Transportation Construction & Material Specifications, 2013 Edition

* = Denotes Contingency to be used as directed by the Engineer

+ = Denotes items to be furnished and installed by the City of Dublin. Do not bid.

REVISION	DATE	DESCRIPTION
1	6-11-14	Quantities Revised per Addendum 1

CALCULATED EAM
CHECKED MRB

GENERAL SUMMARY

JOHN SHIELDS PARKWAY PHASE 1

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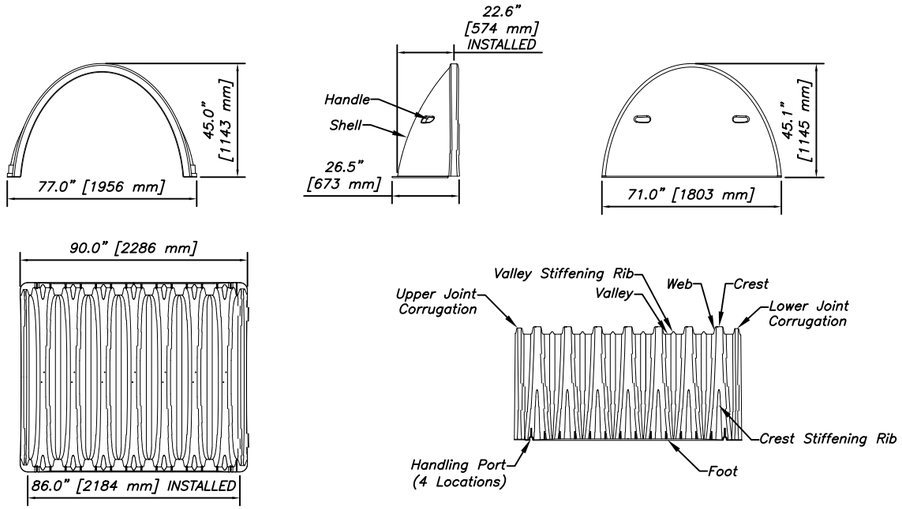
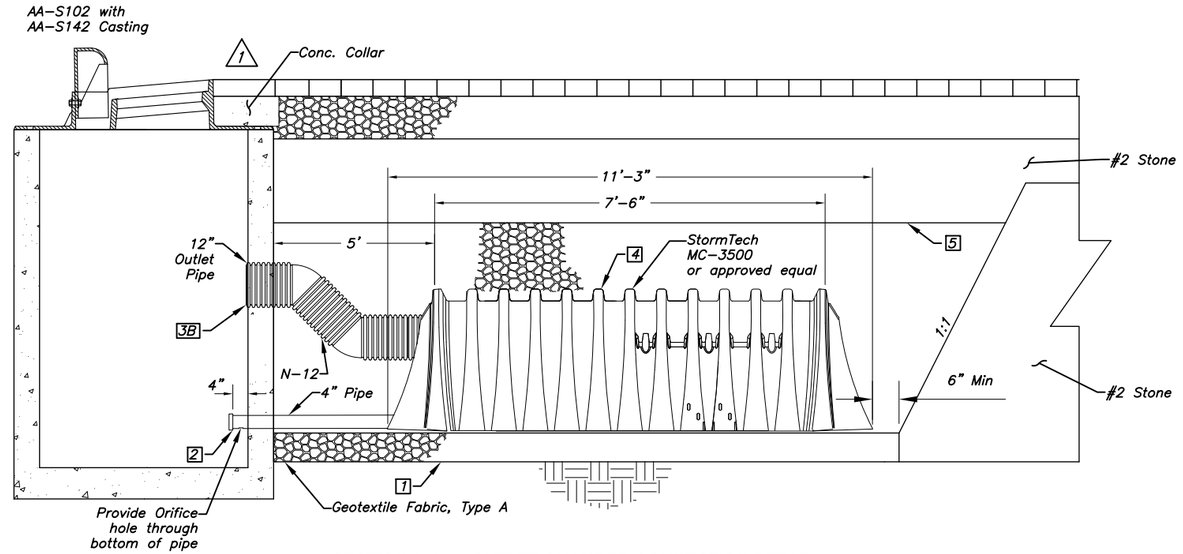
ADDENDUM 1



OUTLET CHAMBER SPECIFICATIONS

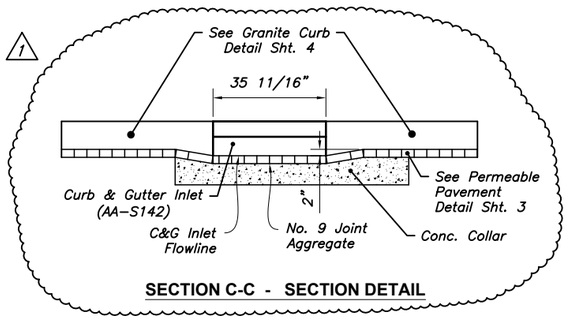
Not to scale



SECTION A-A - OUTLET CHAMBER CONNECTION DETAIL

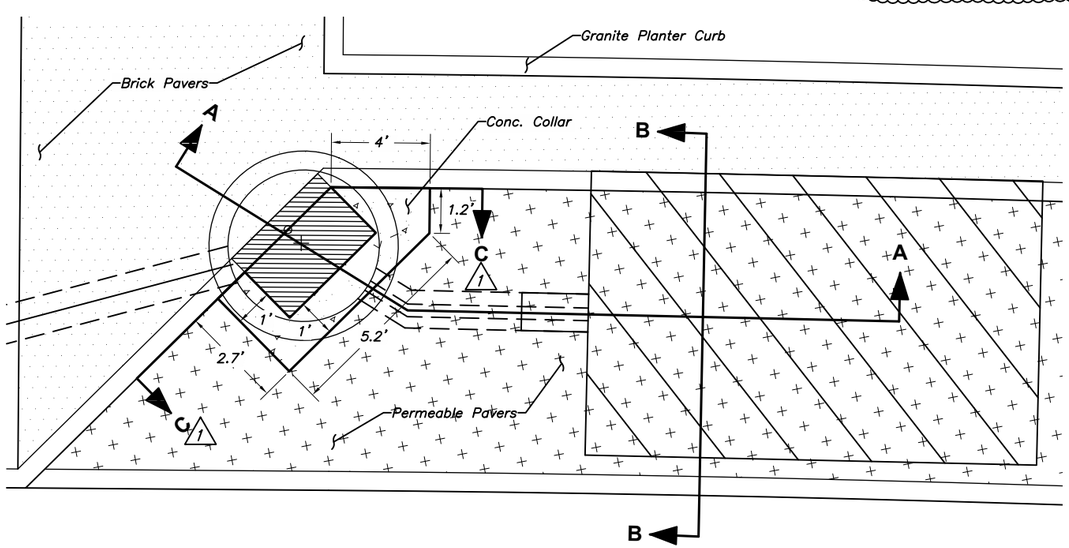
Not to scale

PERVIOUS PAVEMENT & CONTROL STRUCTURE–MAINTENANCE AND INSPECTION		
Inspection Item	*Maintenance Procedures*	*Frequency*
Pervious Pavers	• Inspect and replace any cracked or damaged pavers.	Inspect once a year
Joint Aggregate	• Inspect Joint Aggregate for settlement – top dress if 50% has settled more than 1/2" • Inspect Joint Aggregate for clogging–greater than 40% clogged, vacuum and re–chip.	Inspect 1 year after Construction

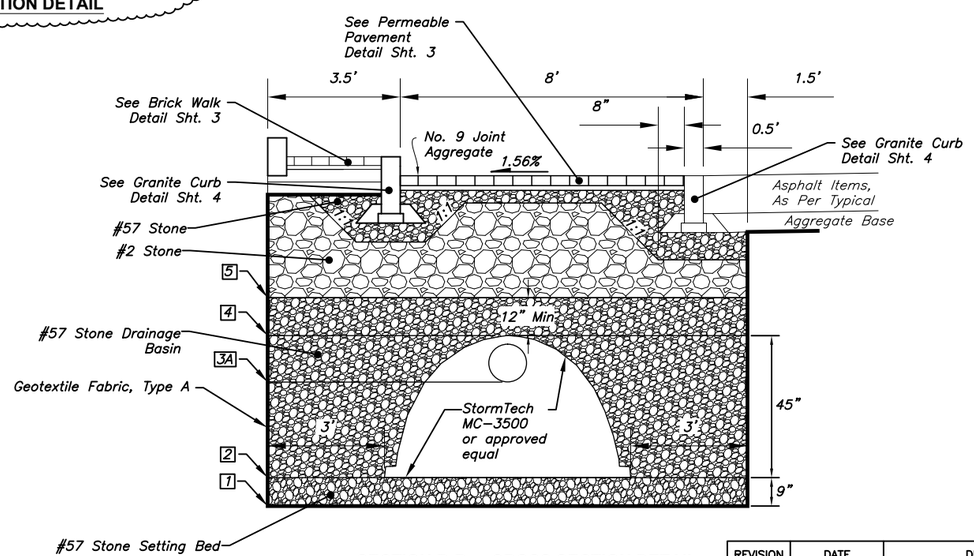


SECTION C-C - SECTION DETAIL

BMP STRUCTURE DETAIL TABLE							
	1	2		3A	3B	4	5
Structure Number	*Bottom of Setting Bed*	*4" U.D. Invert*	*Orifice Size*	*12" Pipe Invert*	*12" Pipe Invert*	*Top of MC–3500*	*Top of #57 Stone*
54	818.99	819.74	0.30"	822.00	823.02	823.55	824.55
47	830.56	831.31	0.40"	833.57	834.59	835.12	836.12
53	818.77	819.52	0.30"	821.78	822.80	823.33	824.33
46	829.24	829.99	0.30"	832.25	833.27	833.80	834.80



JOHN SHIELDS PARKWAY
PERVIOUS PAVEMENT OUTLET DETAIL



SECTION B-B - CROSS SECTION DETAIL

REVISION	DATE	DESCRIPTION
1	6–11–14	Revised Section A–A & Added Section C–C.

CALCULATED EAM CHECKED MRB

STORM SEWER BMP OUTLET DETAIL

JOHN SHIELDS PARKWAY PHASE 1

26
44

ADDENDUM 1

CITY OF COLUMBUS WATER NOTES

WATER MAIN GENERAL NOTES

The City of Columbus Construction and Material Specifications, 2012 edition and all revisions, including all supplements thereto, shall govern all construction items that are a part of this plan, unless otherwise noted.

All water main materials and installations shall be in accordance with the current rules and regulations of the City of Columbus, Division of Water. All City of Columbus, Division of Water Standard Drawings shall apply to the project, unless otherwise noted.

All brass fittings associated with water work, including repairs to the existing system, shall conform to the revised allowable lead extraction limit per the updated NSF/ANSI 61 Standard. The Division of Water's Approved Materials List has been updated to reflect this requirement.

It shall be unlawful for any person to perform any work on City of Columbus water line systems without first securing license to engage in such work, as indicated in Columbus City Code Section 1103.02 and 1103.06. This work includes any attachments, additions to or alterations in any city service pipe or appurtenances (including water service lines and taps). This requirement may be met by utilization of a subcontractor who holds a City of Columbus Water Contractor License or a Combined Water/Sewer Contractor License to perform this work. Utilization of a subcontractor must meet the licensing requirements of City of Columbus Building Code, in particular Section 4114.119 and 4114.529.

No person shall begin construction or installation of a public water main until plans have been approved by the State of Ohio Environmental Protection Agency (OEPA).

The Contractor shall obtain the proper hydrant permit(s), and pay any applicable fees, for any approved hydrant usage deemed necessary for work under this improvement. Permits may be obtained through the Division of Water Permit Office (645-7330). The contractor shall adhere to all rules & regulations governing said permit and must have the original permit on site anytime in which the hydrant is in use. Cost to be included in the various bid items.

All water mains shall be cleaned and flushed, also any water main 12-inch and larger must be properly pigged, in accordance with section 801.13 of the City of Columbus, Construction and Material Specifications.

All water mains shall be pressure tested in accordance with section 801.14 of the City of Columbus Construction and Material Specifications, with the following exception: 150 psi of pressure shall be maintained for at least two hours in any tested section. The City may not approve any test lasting less than two hours regardless of the amount of leakage.

All water mains shall be disinfected in accordance with section 801.15 of the City of Columbus Construction and Material Specifications. Special attention is directed to applicable sections of A.W.W.A. C-651. When the water mains are ready for disinfection, the Contractor shall submit three (3) sets of "as-built" plans (full size sheets only), the as-built survey coordinates, and a letter stating that the water mains have been pressure tested and need to be disinfected, to the City of Columbus, Division of Water The contractor shall be responsible for all costs associated with the disinfection of all water mains constructed under this plan.

Where indicated on the plans, the existing water main shall be abandoned; and any existing water services off this main shall be transferred to the new water main. Prior to abandonment of the existing water main, the proposed water main shall be pigged (if required), tested, chlorinated and put in service and then the existing water services shall be transferred. The Contractor shall maintain water services to all properties during construction of the new water main and shall notify all customers affected by the transfer of services. To ensure that all existing services are transferred to the new main, no water main shall be abandoned until the new water main has been put in service; all affected water services have been transferred; and the existing water main to be abandoned has been shut down for 24 hours. All visible valve boxes, fire hydrants, and service boxes on the water main to be abandoned, which will no longer be in service, shall be removed. All water mains to be abandoned shall be made water tight. The required surface restoration shall be paid for under the appropriate bid item(s).

All water meters associated with this project shall be installed inside the proposed structure unless a meter pit is approved by the Administrator of the Division of Water. All meter pits must conform to Standard Drawing L-7103 for 5/8" through 1" meters of L-6317 A, B, C, D, & E for 1 1/2" or larger meters.

No service connection permits shall be issued or connections made to any service taps until water mains have been disinfected by the City of Columbus, Division of Water.

Water service boxes shall be placed 1' from the edge of the proposed or existing sidewalk between the sidewalk and the curb, or 2 feet inside the right-of-way or easement line when no sidewalk is present or proposed. Refer to Standard Drawing L-9901 for additional information.

Maintain eighteen (18) inches vertical and ten (10) feet horizontal separation between any sanitary or storm sewer piping and structures and all proposed water mains. For instances where ten (10) feet of horizontal separation cannot be maintained from a sewer structure, the water line shall be installed such that the structure is centered between the pipe joints on a full length (18 foot minimum) piece of water pipe.

"Survey Coordinates" shall include all material, equipment, and labor necessary to obtain horizontal and vertical (northing, easting, and elevation) survey coordinates for the water main improvements. The survey coordinates shall be obtained for the completed water main construction and shall include all valves, tees, crosses, bends, deflections, plugs, reducers, tapping sleeves, blow offs, chlorination taps, fire hydrants, air releases, curb stops, casing pipe termini, and other fittings. Additional survey coordinates are required on the water main every 500' where no fitting or other water main structure is being installed within that length of the improvement.

All survey coordinates shall be referenced to the applicable County Engineer's Monuments, and shall be based on the North American Datum of 1983 (NAD 83) with the (NSRS2007) adjustment, with further reference made to the Ohio State Plane South Coordinate System, South Zone, with elevations based on the NAVD 88 datum. All coordinates (Northing, Easting, Elevation) shall be referenced to the nearest hundredth (N xxxxxx.xx, E xxxxxx.xx, Elev. xxx.xx). All survey coordinates shall be accurate to within 1.0 foot horizontal and a tenth of a foot (0.10) or less vertical.

The coordinates shall be documented to the Municipality Engineer or designated Representative in digital spreadsheet form and shall include the applicable item, station, northing, easting, and elevation. Coordinates shall be submitted to the Municipality Engineer or designated Representative on a bi-weekly basis. Coordinates shall also be required to be submitted to the Division of Water as part of the request for chlorination.

Lump sum payment is full compensation for all work involved in obtaining and documenting the survey coordinates as described in this specification.

SPECIAL NOTES

The proposed water main shall be located a minimum distance of twenty (20) feet away from any structure, overhang or footer.

All valve boxes, service boxes, and fire hydrants shall be located within the easement area.

No two (2) adjacent fire hydrants shall be taken out of service concurrently.

The Contractor shall coordinate his work such that no water customer will have their service disrupted more than two (2) times throughout the duration of this project.

Only one connection to an existing water line is permitted before disinfection of a new water line has been completed. All other connections must be made after the line has been disinfected. When a 3-inch or larger tap is to occur on a 20-inch or larger water main, the Contractor shall notify the Division of Water Operation Control Center at (614)-645-7168 twenty-four (24) hours in advance of performing the tap.

ESTIMATE OF QUANTITIES FOR JOHN SHIELDS PARKWAY WATER MAIN

CMSC Item	Description	Qty	Units
801	6" Water Pipe & Fittings with Type 1 Bedding, with Item 912 Compacted Granular Backfill	75	Lin. Ft.
801	8" Water Pipe & Fittings with Type 1 Bedding, with Item 912 Compacted Granular Backfill	527	Lin. Ft.
801	12" Water Pipe & Fittings with Type 1 Bedding, with Item 912 Compacted Granular Backfill	10	Lin. Ft.
801*	Concrete Blocking Class C, Increase or Decrease	50	Cu. Yd.
801*	Ductile Iron Fittings, Increase or Decrease	50	Lb.
802	6" Valve and Appurtenances	3	Each
802	8" Valve and Appurtenances	3	Each
801	12" Water Pipe & Fittings with Type 1 Bedding, with Item 912 Compacted Granular Backfill	10	Lin. Ft.
805	3/4" Water Service Tap, Complete	1	Each
807	Columbus Standard Heavy Duty Valve Box	2	Each
816	6" Water Service Tap Abandoned	1	Each
809	Fire Hydrant, Type A	2	Each
811*	Increase or Decrease in Excavation and Backfill	50	LBS.
812	1" Air Release Outlet	1	Each
SPEC	Survey Coordinates	1	L. Sum

NOTES
* Denotes Contingency

Quantities are carried to General Summary.

WATER MAIN SURVEY COORDINATE TABLE

			PROPOSED			AS-BUILT		
Sheet No.	Station/Offset	Description	Northing	Easting	℄ Elevation	Northing	Easting	℄ Elevation
28	JSP 664+88.15, 7.00' Rt.	Fire Hydrant, Type A Setting	767525.5206	1797995.6614	820.00			
28	JSP 664+98.15, 7.00' Rt.	8" Valve	767529.1943	1798004.9622	820.00			
28	JSP 665+21.15, 7.00' Rt.	8" x 6" Tee	767537.6439	1798026.3544	820.00			
28	JSP 665+21.15, 38.00' Lt.	6" Valve	767579.4482	1798009.8418	822.32			
28	JSP 665+21.15, 43.00' Lt.	1" Air Release Valve	767584.0985	1798008.0049	822.59			
28	JSP 665+21.15, 48.00' Lt.	Install Thrust Block End Cap	767588.7489	1798006.1681	822.85			
28	JSP 665+35.09, 7.00' Rt.	8" x 8" Tee	767542.7641	1798039.3175	820.00			
28	JSP 665+35.09, 38.00' Rt.	8" Valve	767513.9317	1798050.7058	820.00			
28	JSP 665+34.83, 58.00' Rt.	Install Thrust Block End Cap	767495.2382	1798057.8116	820.00			
28	JSP 665+62.15, 7.00' Rt.	Grade Break	767552.7057	1798064.4871	820.00			
28	JSP 665+90.69, 7.00' Rt.	Horizontal Deflection	767563.1916	1798091.0348	821.70			
28	JSP 666+90.00, 7.00' Rt.	8" x 6" Anchoring Tee & Valve	767593.5827	1798184.5975	827.63			
29	JSP 666+90.00, 3.00' Lt.	Grade Break	767603.2669	1798182.1044	825.95			
28	JSP 666+90.00, 13.50' Lt.	6" 90° Bend	767613.4354	1798179.4867	825.95			
28	JSP 666+91.09, 13.50' Lt.	6" Valve	767613.7062	1798180.5571	825.95			
28	JSP 666+93.20, 13.50' Lt.	Fire Hydrant, Type A Setting	767614.2228	1798182.6399	825.95			
28	JSP 667+45.50, 23.64' Rt.	3/4" Service Box	767589.0756	1798241.3274	830.85			
28	JSP 667+45.50, 53.93' Rt.	End Cap	767559.2907	1798246.8251	830.85			
28	JSP 668+09.48, 7.00' Rt.	Grade Break	767614.4454	1798301.0720	834.63			
28	JSP 668+84.72, 7.00' Rt.	Grade Break	767618.5780	1798375.5099	837.40			
28	JSP 669+15.99, 7.00' Rt.	Horizontal Deflection	767618.2324	1798406.5031	838.10			
28	TRD 323+88.00, 19.56' Rt.	8" Valve	767615.2847	1798455.4072	839.21			
28	TRD 323+88.00, 21.47' Rt.	12" x 8" Anchoring Tee & Valve	767615.1694	1798457.3191	839.25			

JSP= John Shields Parkway ℄ Construction
TRD= Tuller Ridge Drive ℄ Construction

REVISION	DATE	DESCRIPTION
1	6-11-14	Revised Quantities & Coordinate Table

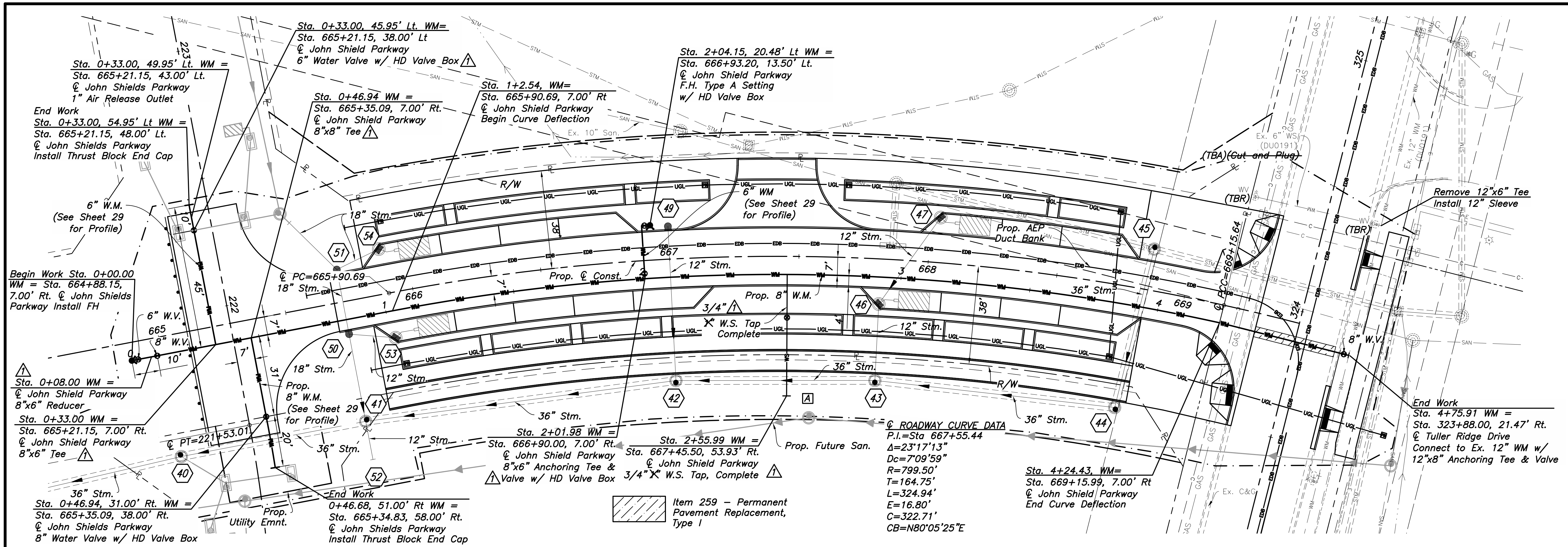
CALCULATED EAM CHECKED MRB

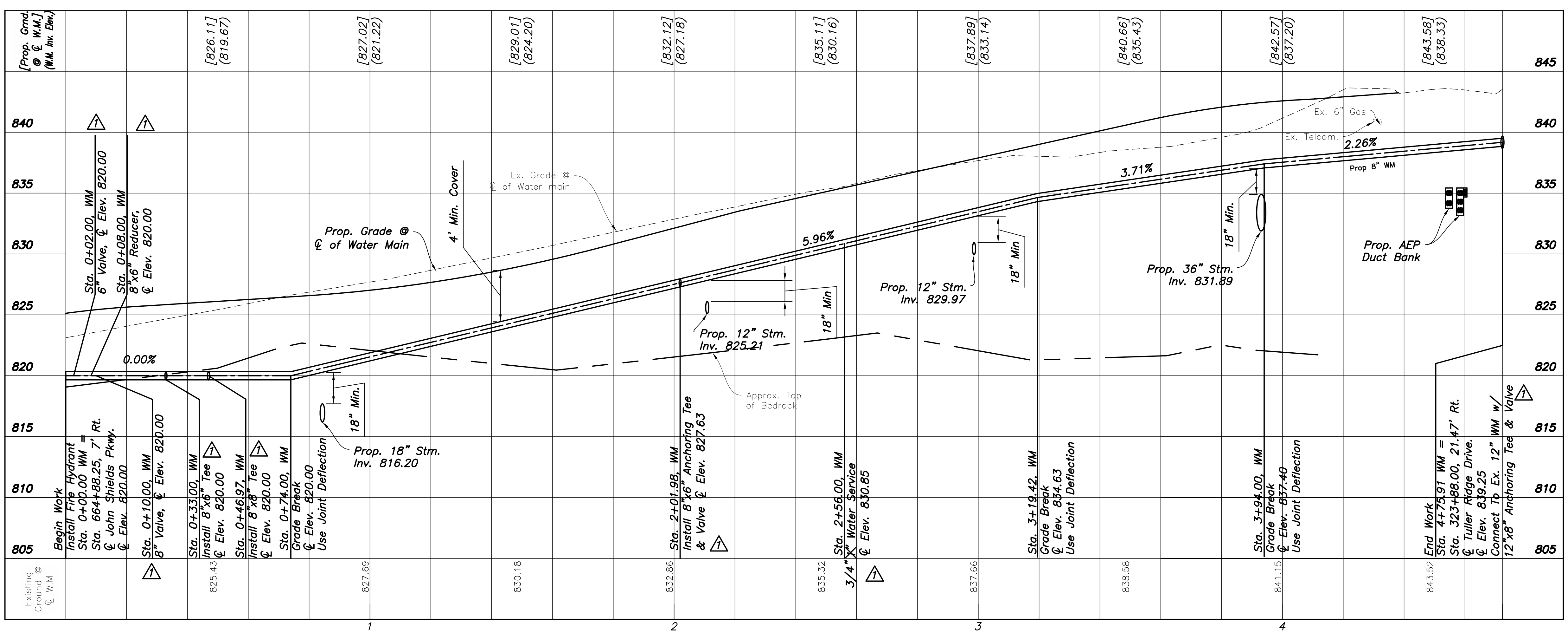
WATER MAIN PLAN & NOTES

JOHN SHIELDS PARKWAY PHASE 1

27
44

ADDENDUM 1





A Stub 3/4" Water Service for Future Park Use

REVISION	DATE	DESCRIPTION
1	6-11-14	Revised Water Items, Added Reducer and 12" Sleeve

CALCULATED EAM
CHECKED MRB

WATER MAIN PLAN & NOTES

JOHN SHIELDS PARKWAY PHASE 1

ADDENDUM 1

REF. NO.	SHEET NO.	STATION		SPEC PLANTING SOIL PLACED	SPEC STRUCTURAL SOIL PLACED	SPEC DECIDUOUS SHADE TREE	SPEC PERENNIAL PLANTINGS	SPEC BULB PLANTINGS	
		FROM	TO	CU YD	CU YD	EACH	EACH	EACH	
S1	40	665+26.18	669+90.69	304					
S2	40	665+26.18	669+90.69		30				
V1	41	665+26.18	667+42.00				3924		1
V2	41	665+26.18	667+42.00					3924	
Ua	41	665+26.18	667+42.00			8			
V1	42	667+42.00	669+90.69				3413		1
V2	42	667+42.00	669+90.69					3413	
Ua	42	667+42.00	669+90.69			7			
TOTALS CARRIED FORWARD TO GENERAL SUMMARY				304	30	15	7337	7337	1

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	V1 QUANTITIES UPDATED
		V2 QUANTITIES ADDED

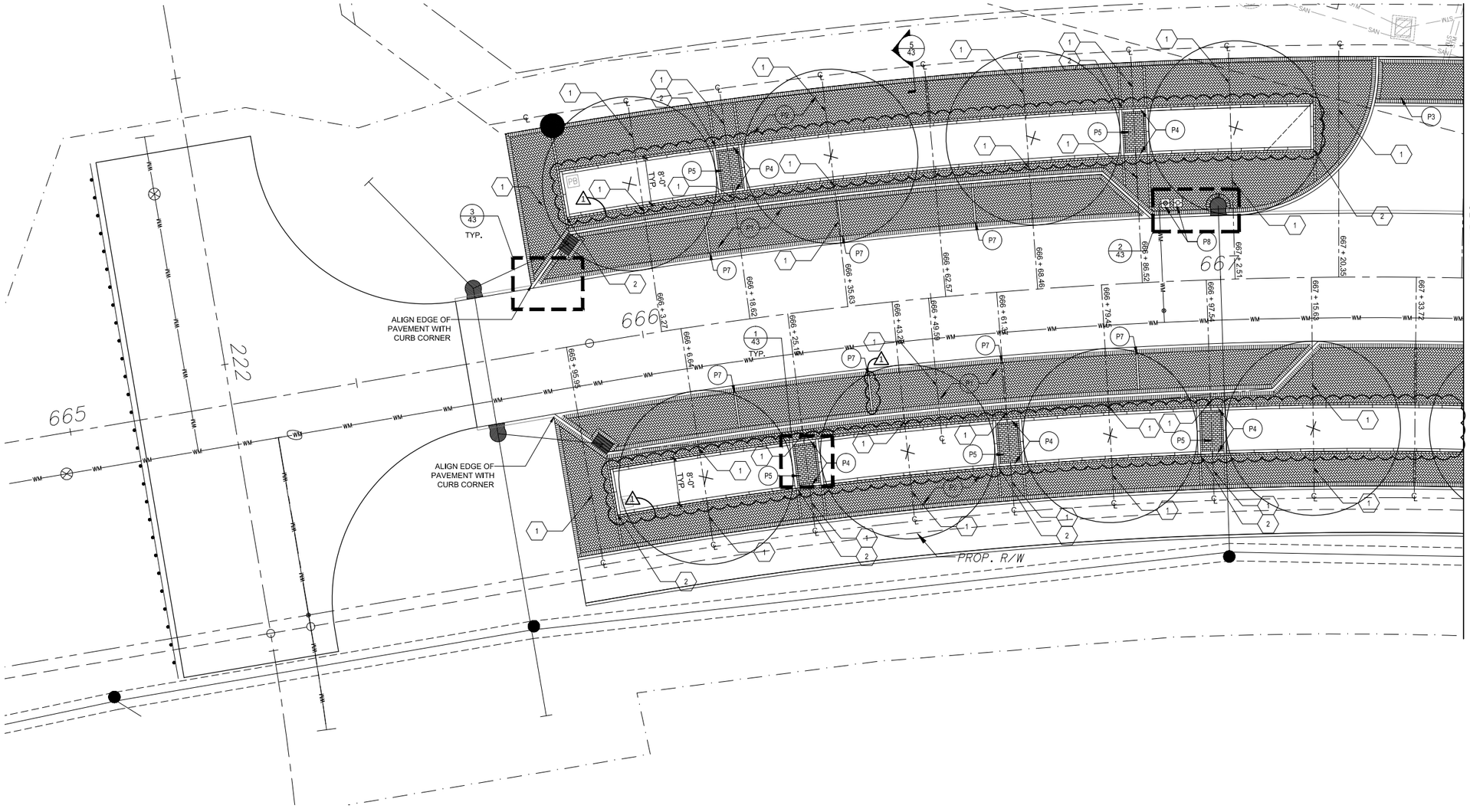
STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED LANDSCAPE ARCHITECT

CALCULATED MB
CHECKED CJK

MKSK
462 South Ludlow Alley
Columbus, Ohio 43215
p. 614 621 2796

LANDSCAPE SUBSUMMARY

JOHN SHIELDS PARKWAY PHASE 1



LEGEND

ITEM	DESCRIPTION	KEY
SPEC	PERMEABLE PAVER ROADWAY	P1
SPEC	BRICK PAVER WALK	P2
SPEC	BRICK PAVER DRIVEWAY	P3
SPEC	GRANITE PAVER WALK (6 INCH X 24 INCH)	P4
SPEC	GRANITE PAVER WALK (4 INCH X 8 INCH)	P5
SPEC	GRANITE PAVER WALK (4 INCH X 4 INCH)	P6
SPEC	GRANITE PAVER ROADWAY (4 INCH X 6 FT 2 INCH)	P7
SPEC	GRANITE PAVER WALK (18 INCH X 18 INCH)	P8

NOTES: SEE SHEETS 3 AND 4 FOR PAVER AND CURB INSTALLATION DETAILS
SEE DETAIL 1/ 43 FOR P6 GRANITE PAVER WALK LAYOUT
SEE 2/ 43 FOR P8- GRANITE PAVER WALK LAYOUT

1 LAY HERRINGBONE PATTERN AT 45 DEGREES TO CENTER LINE

2 ALIGN BRICK COURSE WITH CURB

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	ADD GRANITE PAVER ROADWAY P7
		ADD GRANITE PAVER WALK 4"x4" P6
		ADD GRANITE PAVER WALK 18"x18" P8
		PAVING PATTERN CHANGES

STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED LANDSCAPE ARCHITECT

N

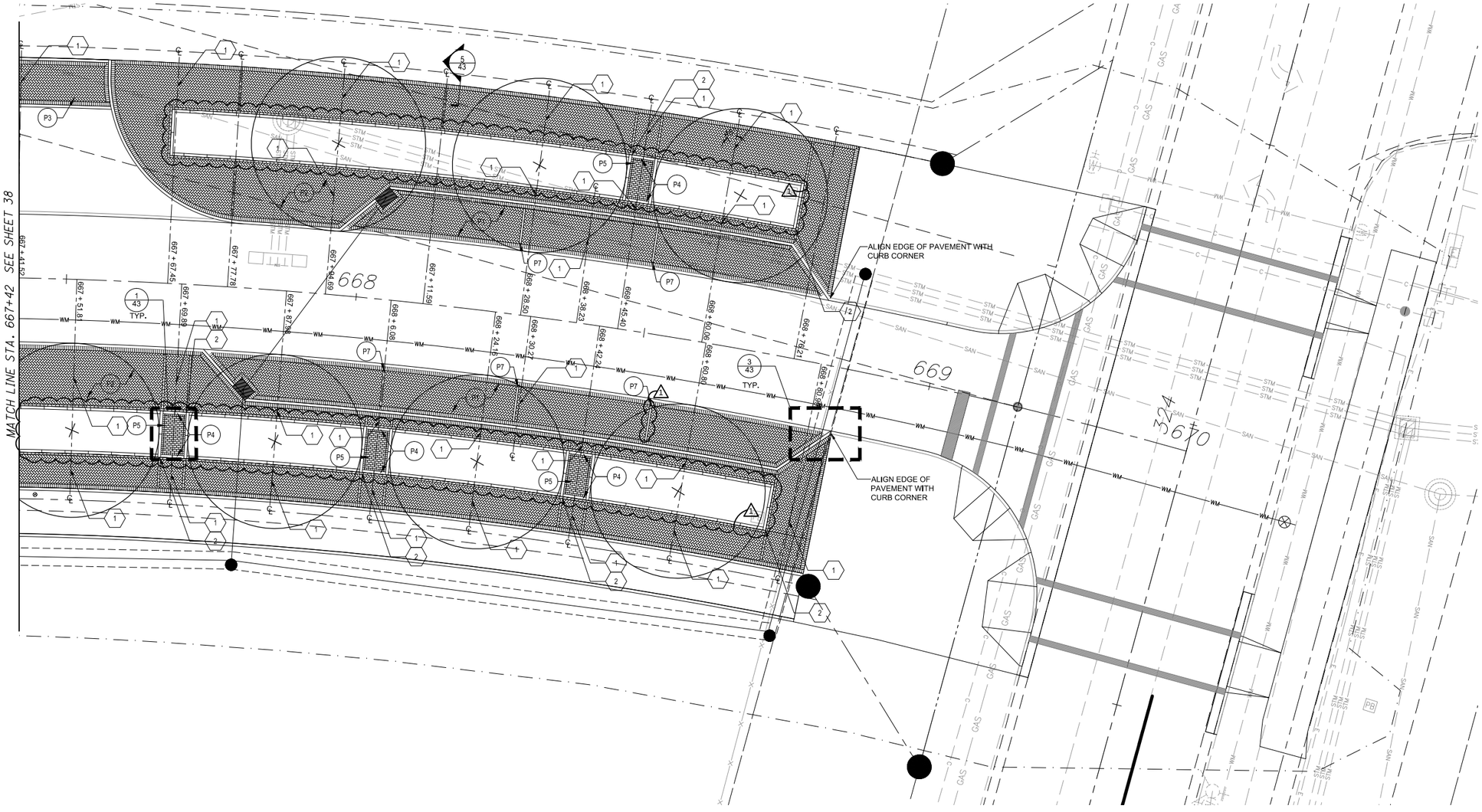
0 5 10 20
HORIZONTAL SCALE IN FEET

CALCULATED MRK | CHECKED CJK

MKSK
462 South Ludlow Alley
Columbus, Ohio 43215
p. 614 621 2796

LANDSCAPE MATERIALS AND LAYOUT PLAN
Sta. 665+26.18 to Sta. 667+42

JOHN SHIELDS PARKWAY PHASE 1



LEGEND

ITEM	DESCRIPTION	KEY
SPEC	PERMEABLE PAVER ROADWAY	P1
SPEC	BRICK PAVER WALK	P2
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SPEC	GRANITE PAVER WALK (4 INCH X 8 INCH)	P5
SPEC	GRANITE PAVER WALK (4 INCH X 4 INCH)	P6
SPEC	GRANITE PAVER ROADWAY (4 INCH X 6 FT 2 INCH)	P7
SPEC	GRANITE PAVER WALK (18 INCH X 18 INCH)	P8

1

NOTES: SEE SHEETS 3 AND 4 FOR PAVER AND CURB INSTALLATION DETAILS
SEE DETAIL 1/ 43 FOR P6 GRANITE PAVER WALK LAYOUT
SEE 2/ 43 FOR P8- GRANITE PAVER WALK LAYOUT

1 LAY HERRINGBONE PATTERN AT 45 DEGREES TO CENTER LINE

2 ALIGN BRICK COURSE WITH CURB

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	ADD GRANITE PAVER ROADWAY P7
		ADD GRANITE PAVER WALK 4"x4" P6
		ADD GRANITE PAVER WALK 18"x18" P8
		PAVING PATTERN CHANGES

STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED
LANDSCAPE ARCHITECT

0 5 10 20
HORIZONTAL SCALE IN FEET

CALCULATED MRK
CHECKED CJK

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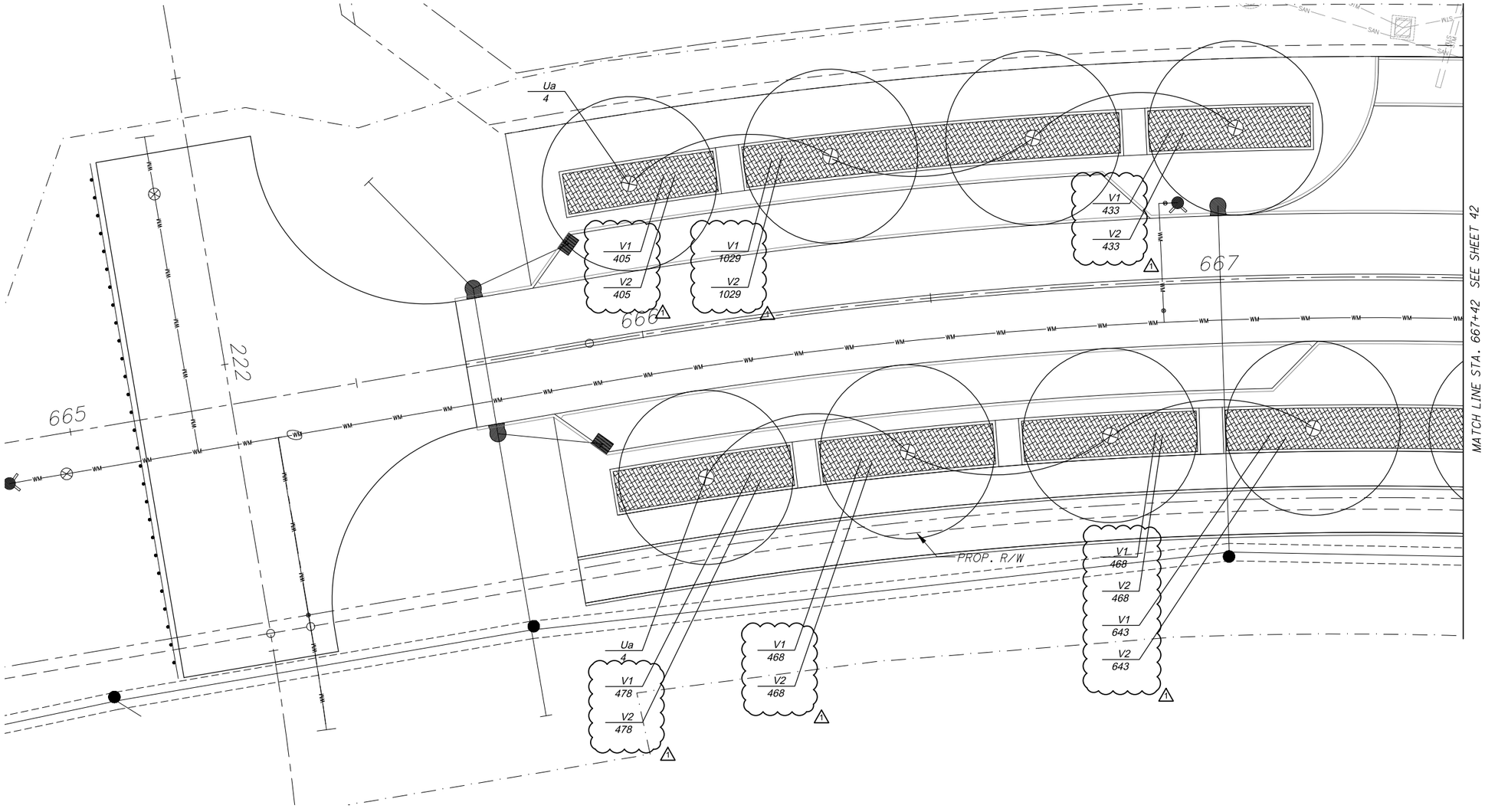
p. 614 621 2796

LANDSCAPE MATERIALS AND LAYOUT PLAN
Sta. 667+42.00 to Sta. 669+90.69

JOHN SHIELDS PARKWAY PHASE 1



LEGEND

ITEM	UNIT	DESCRIPTION	KEY		COMMON NAME	SIZE	SPACING	CONDITION	NOTES
SPEC	EACH	PERENNIAL PLANTINGS	V1		REFER PERENNIAL PLANTING MIX	12" MIN. HT.	8" O.C.	#1 CONT.	EQUAL MIX OF FOUR (4) PERENNIAL SPECIES.
SPEC	EACH	BULB PLANTINGS	V2		REFER BULB PLANTING MIX	12 CM MIN.	8" O.C.	BULB	EQUAL MIX OF TWO (2) BULB SPECIES.
SPEC	EACH	DECIDUOUS SHADE TREE, (3" CAL.), (Ulmus americana 'Princeton')	Ua		PRINCETON AMERICAN ELM	14' MIN. HT.	AS INDICATED	B&B 32" MIN.	MATCHED FOR FORM, HEIGHT, CALIPER, FULLNESS & SYMMETRY OF BRANCHING, HEIGHT OF BRANCHING AND APPEARANCE. FREE OF LIMBS TO HEIGHT OF 7'-0".

PERENNIAL PLANTING MIX

LATIN NAME	COMMON NAME
IRIS VERSICOLOR	BLUE FLAG IRIS
LEUCANTHEMUM SUPERBUM 'BECKY'	BECKY SHASTA DAISY
LIASTRIS SPICATA	GAYFEATHER
RUDBECKIA FULGIDA SPECIOSA	SHOWY BLACK-EYED SUSAN

BULB PLANTING MIX

LATIN NAME	COMMON NAME
MUSCARI ARMENIACUM	GRAPE HYACINTH
NARCISSUS 'SAILBOAT'	SAILBOAT DAFFODIL

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	ADDED PLANT SPECIES

STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED
LANDSCAPE ARCHITECT

HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED MRK
CHECKED CJK

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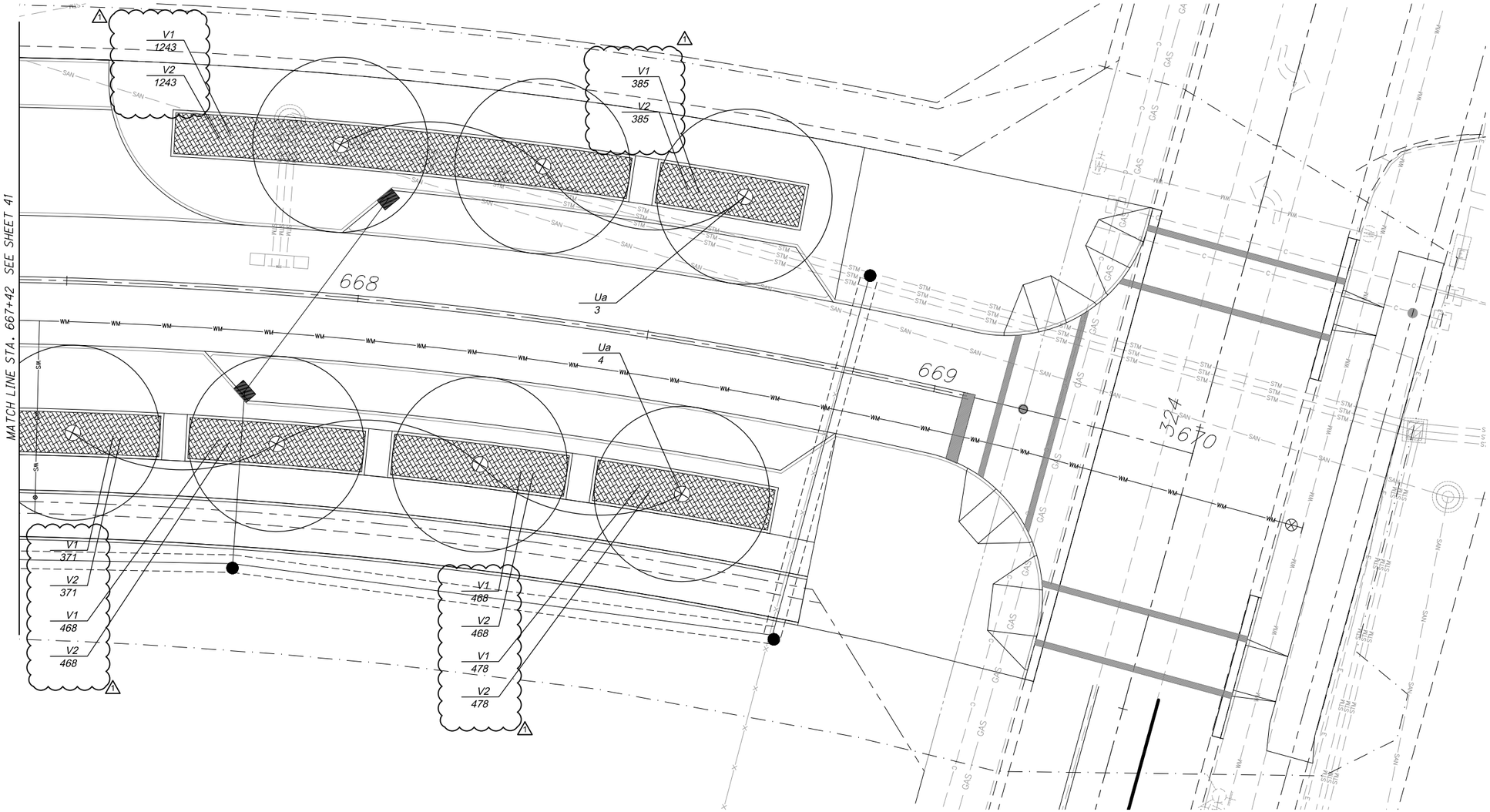
p. 614 621 2796

LANDSCAPE PLANTING PLAN
Sta. 665+26.18 to Sta. 667+42.00

JOHN SHIELDS PARKWAY PHASE 1



LEGEND

ITEM	UNIT	DESCRIPTION	KEY		COMMON NAME	SIZE	SPACING	CONDITION	NOTES
SPEC	EACH	PERENNIAL PLANTINGS	V1		REFER PERENNIAL PLANTING MIX	12" MIN. HT.	8" O.C.	#1 CONT.	EQUAL MIX OF FOUR (4) PERENNIAL SPECIES. ALTERNATE SPECIES MIX.
SPEC	EACH	BULB PLANTINGS	V2		REFER BULB PLANTING MIX	12 CM MIN.	8" O.C.	BULB	EQUAL MIX OF TWO (2) BULB SPECIES. ALTERNATE SPECIES MIX.
SPEC	EACH	DECIDUOUS SHADE TREE, (3" CAL.), (Ulmus americana 'Princeton')	Ua		PRINCETON AMERICAN ELM	14' MIN. HT.	AS INDICATED	B&B 32" MIN.	MATCHED FOR FORM, HEIGHT, CALIPER, FULLNESS & SYMMETRY OF BRANCHING, HEIGHT OF BRANCHING AND APPEARANCE. FREE OF LIMBS TO HEIGHT OF 7'-0".

PERENNIAL PLANTING MIX

LATIN NAME	COMMON NAME
IRIS VERSICOLOR	BLUE FLAG IRIS
LEUCANTHEMUM SUPERBUM 'BECKY'	BECKY SHASTA DAISY
LIASTRIS SPICATA	GAYFEATHER
RUDBECKIA FULGIDA SPECIOSA	SHOWY BLACK-EYED SUSAN

BULB PLANTING MIX

LATIN NAME	COMMON NAME
MUSCARI ARMENIACUM	GRAPE HYACINTH
NARCISSUS 'SAILBOAT'	SAILBOAT DAFFODIL

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	ADDED PLANT SPECIES

STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED
LANDSCAPE ARCHITECT

N

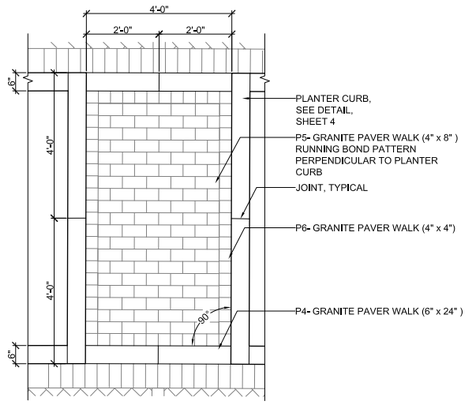
0 5 10 20
HORIZONTAL SCALE IN FEET

CALCULATED MRK
CHECKED CJK

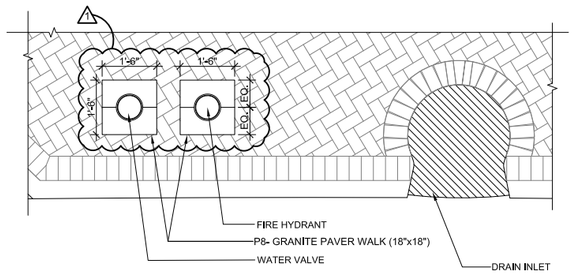
MKSK
462 South Ludlow Alley
Columbus, Ohio 43215
p. 614 621 2796

LANDSCAPE PLANTING PLAN
Sta. 667+42.00 to Sta. 669+90.69

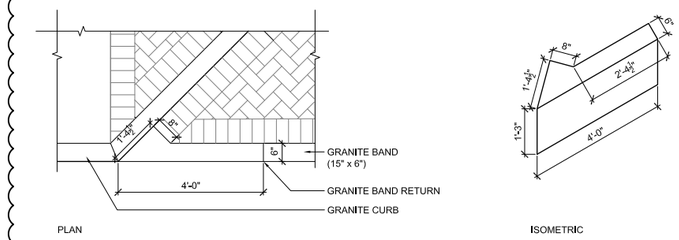
JOHN SHIELDS PARKWAY PHASE 1



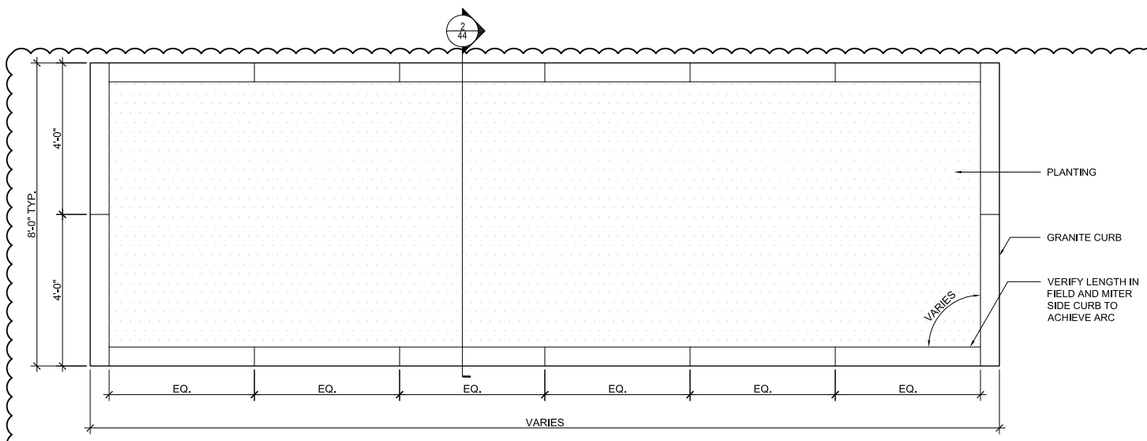
1 TYPICAL GRANITE PAVER WALK ENLARGEMENT
SCALE: 1/2" = 1'-0"



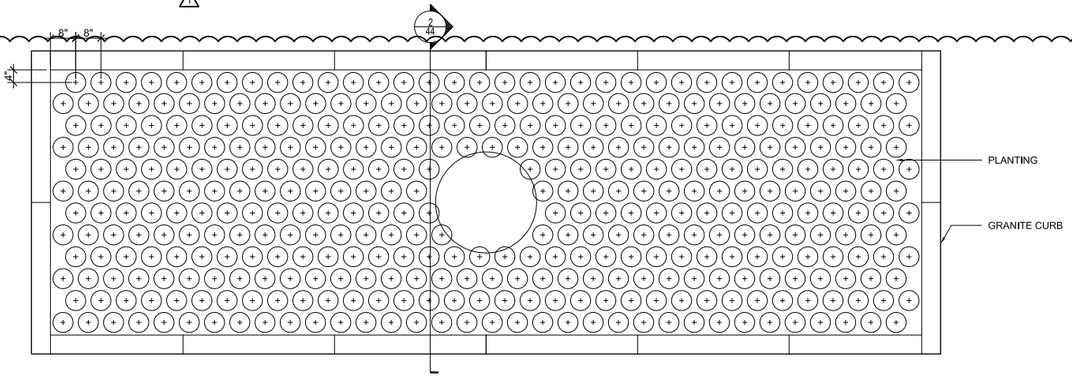
2 BRICK PAVER WALK ENLARGEMENT AT UTILITIES
SCALE: 1/2" = 1'-0"



PAVING ENLARGEMENT AT GRANITE BAND RETURN
INCLUDED FOR PAYMENT WITH ITEM 609 - GRANITE BAND
3 SCALE: 1/2" = 1'-0"



4 TYPICAL STREET PLANTER
SCALE: 1/2" = 1'-0"



5 TYPICAL STREET PLANTER PLANT SPACING
SCALE: 1/2" = 1'-0"

REVISIONS

REV.	DATE	DESCRIPTION
1	6/11/2014	ADDED DETAILS, MODIFIED GRANITE & BRICK PAVER WALK DETAILS
		MODIFIED ENLARGEMENT AT GRANITE BAND RETURN

STATE OF OHIO
TIMOTHY S. SCHMALENBERGER
621
REGISTERED
LANDSCAPE ARCHITECT

CALCULATED MB
CHECKED CJK

MKSK
462 South Ludlow Alley
Columbus, Ohio 43215
p. 614 621 2796

LANDSCAPE DETAILS

JOHN SHIELDS PARKWAY
PHASE 1